THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

Art. I. *Remarks on Spinal Irritation as Connected with Nervous Diseases; with Cases.* By Isaac Parrish, M. D.

In some late investigations on the obscure subject of nervous pathology, instituted by several eminent practitioners of Great Britain, an opinion has been advanced, and urged with considerable authority, that many chronic nervous disorders have a local and determinate seat in some portion of the spinal marrow or great sympathetic ganglia, and hence that these obstinate diseases are most effectually treated by applications directed to the spinal column.

I propose, in the present paper, briefly to notice some of the facts and arguments upon which this conclusion is founded, together with the pathological principles which it involves, and their application to the diagnosis and treatment of this extensive and obscure class of diseases. I shall then endeavour to illustrate the several points embraced in the inquiry by narrating cases, most of which have fallen under my own observation while fulfilling the duties of resident student in the Philadelphia Alms-house Infirmary.

In adverting to the obvious and acknowledged ignorance which prevails in relation to the nature of most maladies, which are supposed to reside solely in the nervous apparatus, and in considering the immense amount of moral and physical distress which they produce, every one must most seriously desire the establishment of some definite principles on which their treatment may be conducted.

Believing that the present vague and unintelligible notions on the pathology of neuralgic diseases, have arisen from the obscurity in which the normal functions of the nervous system have always been involved, it may be proper briefly to advert to late physiological dis-

UNIVERSITY OF PENNSYLVANIA.

At a Medical Commencement, held in the Musical Fund Hall, March 29th, 1832, the Degree of Doctor of Medicine was conferred upon the following Gentlemen:—

	SUBJECT OF THESIS.
IRELAND.	
Matthew Anderson, . . .	*Scarlatina Anginosa.*
ALABAMA.	
John Stuart Peters, . . .	*Modus Operandi of Cold.*
Ambrose K. Ellett, . . .	*Acute Hepatitis.*
Algernon Sidney Harris, .	*Sprains.*
Wells A. Thompson, . .	*Superficial and Suppurating Burns.*
NORTH CAROLINA.	
Thomas Mathews, . . .	*Menstruation and Conception.*
William S. Langley, . .	*Blood-letting.*
Archibald S. Hall, . . .	*Hæmorrhoids.*
Henry Yarbrough, . . .	*Cholera Infantum.*
James Y. Thompson, . .	*Scrofula.*
Alfred Plummer, . . .	*Coxalgia.*
Boaz Whitfield, ...	*Bilious Colic.*
Turner Wilson, ...	*Lobelia Inflata.*
Richard Cochran, . . .	*Cynanche Trachealis.*
William A. Evans, . . .	*Circulation.*
SOUTH CAROLINA.	
Randell Croft, ...	*Intermittent Fever.*
James E. Nott, ...	*Revulsion.*
Burwell B. Rudulph, . .	*Uses of the Brain and Surfaces of Relation.*
William L. Felder, . . .	*Remittent Fever.*
Æneas M. Mikell, . . .	*Aneurism.*
CONNECTICUT.	
Isaac W. Russell, . . .	*Burns.*
DELAWARE.	
Franklin W. Clement, . .	*Ulcers.*
Herbert Morris, ...	*Stricture of the Urethra.*
John Alexander Lockwood	*Poisoning by Arsenic.*
DISTRICT OF COLUMBIA.	
Charles Farquhar, . . .	*Lobelia Inflata.*
GEORGIA.	
M'Carrell Peurifoy, . . .	*Acute Hepatitis.*
Daniel C. M'Leod, . . .	*Trismus Nascentium.*
Algernon Sidney Brown, .	*Necrosis.*
J. Borroughs Ponce, . .	*Phthisis Pulmonalis.*
James Y. Morel, ...	*Theory and Mode of Treating Fever of Savannah.*
LOUISIANA.	
John M. W. Picton, . .	*Exclusion of Light in Variola.*
John P. Davidson, . . .	*Yellow Fever.*
Stephen D. M'Neil, . .	*Pathology of Dysentery.*
Thomas B. Percy, . . .	*Proximate Cause of Dysentery.*
MARYLAND.	
Thomas I. Snowden, . .	*Inguinal Hernia.*
Henry A. Offutt, . . .	*Compression of the Brain.*
William Riley, ...	*Acute Bronchitis.*
Thomas M. Williams, . .	*Hæmorrhage from Wounded Arteries, with the Natural and Artificial Means of Arresting it.*
Edgar M. Gatton, . . .	*Luxation of the Humerus.*
Henry Hughes, ...	*Intermittent Fever.*

	SUBJECT OF THESIS.
MISSOURI.	
Meredith Martin, . . .	*Cholera Infantum.*
NEW JERSEY.	
Thomas R. Clement, . .	*Pertussis.*
John Humphreys, . . .	*Ardent Spirits.*
John Nelson Woodhull, .	*Vaccination.*
Henry P. Welling, . . .	*Fever.*
Andrew F. E. Mickle, . .	*Vegetable Alkalies.*
NEW YORK.	
Anson Colman, ...	*Chronic Epilepsy.*
Stephen O. Almy, . . .	*Epidemic Ophthalmia.*
Charles Augustus Porter, .	*Hydrops Abdominis.*
Francis Lee Harris, . . .	*Femoro-Coxalgia.*
Frederick Giraud, . . .	*Dyspepsia.*
Minturn Post, ...	*Tetanus.*
John H. Griscom, . . .	*Apocynum Cannabinum.*
PENNSYLVANIA.	
Thomas Forrest Betton, .	*Structure and Functions of the Placenta.*
John Spayd, ...	*De Manustupratione.*
James Francis Latta, . .	*Probable Cause of Intermittent Fever.*
William B. Taylor, . . .	*Puerperal Fever.*
Richard M. Kendall, . .	*Pulmonary Consumption.*
William G. Knowles, . .	*Acute Hepatitis.*
Thomas S. Kirkbride, . .	*Neuralgia.*
Mifflin Wistar, ...	*Digestion.*
Samuel Bradford, . . .	*Gastritis.*
Frederick Turnpenny, . .	*Pathology and Treatment of Epilepsy.*
Paul Beck Goddard, . .	*Anatomy and Physiology of Mucous Membrane.*
William C. Irwin, . . .	*Medical Treatment of Retention of Urine.*
Edward Alex. Nassau, . .	*Injuries of the Brain.*
Isaac Parrish, ...	*Irritation of the Spinal Marrow.*
Alexander Shields, . . .	*Life.*
Patrick Joseph Griffin, .	*Intermittent.*
Francis West, Jr. . . .	*Hepatitis.*
John Howard Ingram, . .	*Bronchitis.*
John R. Geddis, ...	*Ergot.*
Robert Caldcleugh, . . .	*Inflammation of Mucous coat of Intestinal Canal.*
John W. Luther, . . .	*Hæmorrhoids.*
Henry Koons, ...	*Dysentery.*
William Pepper, ...	*Apoplexy.*
David N. Scott, ...	*Prunus Cerasus Virginiana.*
Charles B. Ferguson, . .	*Intermittent Fever.*
Samuel Pollock, ...	*Tracheitis.*
John D. Ross, ...	*Cynanche Trachealis.*
Andrew Bush, ...	*Topical Depletion and Endermic Irritation.*
William A. Smith, . . .	*Puerperal Fever.*
Charles B. Voight, . . .	*Necrosis.*
Mark M. Reeve, ...	*Hæmatemesis.*
James Teas, ...	*Gangrænopsis.*
Thomas Davis, ...	*Acute Hepatitis.*
Samuel Hayes Harry, . .	*Compound Dislocations of the Ankle.*
TENNESSEE.	
William W. Searcy, . . .	*Injuries of the Head.*
VIRGINIA.	
John Cyrus Mercer, . .	*Functions of the Fifth pair of Nerves.*
Joshua Morton, ...	*Blood-letting.*
Moses A. Levy, ...	*Dropsy.*

George Cobb, ...	*Retention and Suppression of the Menses.*
James F. Young, . . .	*Acute Hepatitis.*
Daniel S. Green, ...	*Functions of Spleen.*
William S. Jeffries, . . .	*Cholera Infantum.*
William D. Christian, . .	*Animal Heat.*
James M. Austin, . . .	*Fever.*
Joseph V. Hobson, . . .	*Delirium Tremens.*
Richard Scott Blackburn .	*Delirium Tremens.*
George K. Birchett, . .	*Syphilis.*
Robert W. Lindsay, . .	*Physiology of Digestion.*
Francis T. Grady, . . .	*Digestion.*
George N. Kennon, . . .	*Sedative Effects of Tartrate of Antimony, and Acetate of Squills.*
William Henry Howard, .	*Nature of Tuberculous Consumption.*
David Patteson, ...	*Phrenitis.*
William H. Twyman, . .	*Hepatitis Acuta.*
Francis H. Deane, . . .	*Modus Operandi of Revulsives.*
Iverson L. Twyman, . .	*Acute Rheumatism.*
Baynham Baylor, . . .	*Scarlatina.*
Clifford Cabell, ...	*Intermittent.*
Nathan Fletcher, . . .	*Stricture of Urethra.*
William Baird, ...	*Acute Gastritis.*
William F. Alexander, .	*Arterial Circulation.*
Samuel G. Henkel, . . .	*Diseases of the Eye.*
Orlando S. Jones, . . .	*Rheumatism.*
Leonard Henley, . . .	*Menstruation.*
William Mills, Jr. . . .	*Anatomy and Physiology of the Ganglionic System.*
Philip Turpin, ...	*Instrumental Labour.*
Thomas H. Venable, . .	*Cholera Infantum.*
Albert G. Wortham, . .	*Morbus Coxarius.*
Samuel Taylor, ...	*Cold.*
Thomas M. Jackson, . .	*Tetanus.*
Thomas L. Hunter, . . .	*Malaria.*
Julius C. Branch, . . .	*Cholera Infantum.*
Peter Field Gay, . . .	*Bilious Remittent Fever.*
George Mason, ...	*Superficial Burns.*
William L. Gatewood, . .	*Cynanche Trachealis.*
Joseph Cowan, ...	*Gonorrhœa Virulenta.*
William R. Savage, . .	*Natural and Artificial Process of Stopping Hæmorrhage from Wounded and Divided Arteries.*
Valentine Y. Conway, . .	*Mania.*
Henry G. Jackson, . . .	*Flatulent Colic.*
John L. Dixon, ...	*Importance of Symptoms.*
James H. Brander, . . .	*Hydrocephalus Internus.*

The following gentlemen received the Degree of Doctor of Medicine at the Commencement in July, 1831.

James M. Perkins,	Ten. .	*Acute Dysentery.*
Eugene Palmer,	Con. .	*Pernio.*
Lewis S. Somers,	Penn.	*Dyspepsia.*

TOTAL, 136.

WILLIAM E. HORNER, *Dean.*

UNIVERSITY OF MARYLAND.

At a public commencement held in the University of Maryland on the 19th of March, 1832, the following gentlemen were admitted to the Degree of Doctor of Medicine.

Henry Skinner, of Maryland, on Cynanche Trachealis.
William M. Stone, of Maryland, on De Colico.
Washington Dorsey, of Maryland, on Diabetes Mellitus.
Alexander S. Hawkins, of Maryland, on Malaria.
William H. Farrow, of Maryland, on Phlegmasia Alba Dolens.
Thomas Feinour, of Maryland, on Epilepsy.
Cecilius B. Calvert, of Maryland, on Fever.
Joseph Ford, of Maryland, on Cholera Infantum.
William A. Seldon, of Virginia, on Phlebitis.
Walker Jones, of Virginia, on Hepatitis.
Lewis W. Foulke, of Pennsylvania, on Injuries of the Head.
William T. Leonard, of Maryland, on Phlegmasia Dolens.
Samuel Higgins, of Maryland, on Fever.
Philip N. Norris, of Virginia, on Dislocations.
John H. Skinner, of Maryland, on Decarbonization of blood.
Richard W. Bowie, of Maryland, on Congestive Bilious fever.
John H. T. Cockey, of Maryland, on Morbid consequences of loss of blood.
Robert P. Magruder, of Maryland, on Yellow Fever.
John H. Riggs, of Maryland, on Pathology of Intermittent Fever.
James W. Waters, of Maryland, on Cynanche Tonsillaris.
Thomas C. Kirk, of Maryland, on Chorea Sancti Viti.
John Evans, of Maryland, on Dysentery.
James B. M'Kee, of Maryland, on De Mentis effectibus.
James S. Naudain, of Delaware, on Hypochondriasis.
Nathan Hussey, of Maryland, on Dysentery.
Philip Kephart, of Maryland, on Nature and operation of Kine Pock.
Garret Alvater, of Maryland, on Puerperal Fever.
Henry W. Houston, of Delaware, on Malaria.
James T. N. Maddox, of Maryland, on Delirium Tremens.
Samuel M'Pherson, of Maryland, on Asphyxia.
Samuel Weisel, of Maryland, on Hernia Inguinalis.
Robert A. Nelson, of Virginia, on Hysteria.
Leonard C. M'Phail, of Maryland, on Variola.
John F. Petherbridge, of Maryland, on Modus operandi and Therapeutic application of Cathartics.
John W. Butler, of Louisiana, on Blood-letting.
Theodore Jenkins, of Maryland, on Congestive Theory of Asthma.
Henry N. Martin, of Maryland, on Nature and treatment of Gun Shot wounds.
Joseph Howard, of Maryland, on Delirium Tremens.
Edward D. Gazzam, of Pennsylvania, on Puerperal Peritonitis.
Samuel H. Birckhead, of Maryland, on Asthma.
Francis W. G. Thomas, of Virginia, on Bilious Fever.
William Beadles, of Virginia, on Diarrhœa.
Lake Robinson, of Maryland, on Intermittent Fever.
Presley Nelms, of Virginia, on Pneumonia Biliosa.
Daniel H. Lawrence, of Maryland, on Inflammation.
Hyllary P. Mudd, of Maryland, on Dysentery.
Robert Otway Blakey, of Virginia, on Dysentery.
Bernard I. Miller, of District of Columbia, on Cancer.
Reuben T. Gray, of South Carolina, on Anasarca.
Junius C. Dunbibin, of North Carolina, on Hepatitis.

George W. Crum, of Maryland, on Pneumonia Biliosa.
Thomas A. Davis, of Maryland, on Dysentery.
**Robert C. Hall*, of Maryland, on De Hepatitis.
James G. Brehon, of North Carolina, on Hæmoptoe.
James T. Hargraves, of Maryland, on Cynanche Tracheali.
John C. Polk, of Maryland, on Yellow Fever.
William T. Brent, of Maryland, on Tetanus.
Benjamin C. Snyder, of Maryland, on Nephritis.
Alexander C. Robinson, of Maryland, on Vegetable Physiology.
William N. Baker, of Maryland, on Sympathetic Nerve.
Presley N. Williams, of District of Columbia, on Cause of Fever.

N. POTTER, *Dean*

* The Medal for the Dissertation best written in Latin, was adjudged to this gentleman.

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Philadelphia, March 21*st*, 1832.

JOURNAL

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This Journal is devoted to the objects of Pharmaceutic Research, viz. Chemistry, (General and Pharmaceutic,) Materia Medica, Zoology, Botany, Mineralogy, &c. &c. Intended for the benefit of the Apothecary, it merits his patronage and support.

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TO READERS AND CORRESPONDENTS.

The illness of the Editor has prevented his completing an elaborate review he was preparing, of the various works on the symptoms, pathology and treatment of cholera. Should his health permit the early completion of the review, it will be published in anticipation of the next number of the Journal.

The following works have been received:—

Transactions of the Medical and Physical Society of Calcutta, Vol. V. (From the Society.)

Physiological Pyretology; or a Treatise on Fevers; according to the Principles of the New Medical Doctrine. By F. G. Boisseau, M. D. P. &c. &c. Translated from the Fourth French Edition. By J. R. Knox, M. D. Carey & Lea, 1832. (From the publishers.)

Report of the College of Physicians of Philadelphia, to the Board of Health on Epidemic Cholera. (From J. Bell, M. D.)

Library of Practical Medicine. Published by Order of the Massachusetts Medical Society for the Use of its Fellows. Vol. II. Containing Principles of Surgery. By John Pearson, F. R. S. and Surgical Observations on the Constitution, Origin, and Treatment of Local Diseases, and on Aneurisms. By John Abernethy, F. R. S. Boston, 1832. (From the Society.)

A Full Account of the Operation of Injecting the Veins with Aqueous and Saline Liquids, for the Cure of Malignant Cholera, in the most Hopeless Cases. From the London Lancet. New York. Peter Hill. (From the publisher.)

A Manual of Surgery, founded upon the Principles and Practice lately taught by Sir Astley Cooper, Bart. F. R. S. &c. &c. and J. H. Green, Esq. F. R. S. &c. &c. Third edition, considerably enlarged, containing many additional notes from the writings of other distinguished surgeons. Edited by Thomas Castle, F. L. S. of Queen's College, Oxford, &c. &c. Boston, Monroe & Francis. New York, C. S. Francis. (From the publishers.)

A Treatise on Puerperal Peritonitis. By A. C. Baudelocque, M. D. &c. &c. to which was awarded the Prize by the Royal Society of Medicine of Bordeaux. Translated from the French. By G. S. Bedford, M. D. Lecturer on Obstetrics, &c. New York, 1831. (From the translator.)

A Treatise on Cholera Morbus; or Researches on the Symptoms, Nature, and Treatment of this Disease; and on the different Means of avoiding it. By F. G. Boisseau, Professor in the Military Hospital of Metz, &c. &c. Translated from the French, by G. S. Bedford, M. D. Lecturer on Obstetrics, &c. New York, 1832. (From the translator.)

An Eulogy on the late James M. Pendleton, M. D. Delivered by appointment of the New York City and County Medical Society, in the Hall of Colum-

bia College. By G. S. Bedford, M. D. &c. &c. New York, 1832. (From the author.)

The Physician's first steps in Professional Life: an Address delivered at the Medical Commencement in Washington, March 7th, 1832. By Thomas Henderson, M. D. Professor of the Theory and Practice of Medicine. Washington, 1832. (From the author.)

Practical Essays on Medical Education and the Medical Profession in the United States. By Daniel Drake, M. D. Professor in the Medical College of Ohio. (From the author.)

A Practical Treatise on the History, Prevention, and Treatment of Epidemic Cholera, designed both for the Profession and the People. By Daniel Drake, M. D. Cincinnati. Corey and Fairbank, 1832.

The Principles of Midwifery: including the Diseases of Women and Children. By John Burns, M. D. &c. From the Seventh London Edition, revised and enlarged; with Improvements and Notes, by T. C. James, M. D. Professor of Midwifery in the University of Pennsylvania. C. S. Francis, New York, and Monroe & Francis, Boston, 1831. (From the publishers.)

Opinion upon the Epidemic Cholera Morbus observed at Warsaw. By Dr. O. A. Binaghi. Translated from the Italian. By Wm. Sampson, Esq. New York, Peter Hill. (From the author.)

Tractatus Anatomico-Pathologicus systens duas observationes rarissimas de formatione fibrarum muscularium in pericardio atque in Pleura obviarum, quem consensu gratiosi medicorum Heidelbergensium ordinis publico examini submittit Georgius Leo-Wolf, Hamburgensis, Med. Chirurg. atque artis obstet. doct. Tab. 4. (From the author.)

De morbo qui læsiones in cadaveribus dissecandis haud raro sequi solet. Dissertation inauguralis medica. Auctor Mauritius Leo-Wolf, Hamburgensis, M. D. (From the author.)

Archives Générales de Médecine, January, February, March, and April, 1832. (In exchange.)

Gazette Medicale de Paris, February, March, and April, 1832. (In exchange.)

Revue Médicale, January, February, and March, 1832. (In exchange.)

Bulletin des Sciences Medicales, September, and October, 1831. (In exchange.)

Transactions Medicales, February, and March, 1832. (In exchange.)

Journel Universel et Hebdomadaire, February, March, and April. (In exchange.)

Memorial Encyclopedique et Progressive des Connaissances Humaines, January, February, and March, 1832. (In exchange.)

Annales de la Médecine Physiologique, November, 1831. (In exchange.)

Journal de Chimie Medicale, April, 1832. (In exchange.)

Bibliothek for Læger, Redegeret af dens Medlem. G. Otto, M. D. No 1 and 2, 1832.

Edinburgh Medical and Surgical Journal, for April, 1832. (In exchange.)

London Medical Gazette, for February, March, April, and May, 1832. (In exange.)

London Medical and Surgical Journal, for December, 1831, and January, February, March, April and May, 1832. (In exchange.)

London Medical and Physical Journal, for May and June, 1832. (In exchange.)

The Journal of the Royal Institution of Great Britain, for December, 1831. (In exchange.)

The Transylvania Journal of Medicine and the Associate Sciences. Vol. V. No. 1, 1832. (In exchange.)

The Boston Medical and Surgical Journal, Vol. VI. (In exchange.)

The Western Journal of the Medical and Physical Sciences, for April, 1832. (In exchange.)

The New York Medico-Chirurgical Bulletin, for February, March and April, 1832. (In exchange.)

Authors of new medical books, desirous of having them reviewed or noticed in this Journal at the earliest opportunity, are invited to transmit to the *Editor* a copy as soon after publication as convenient, when they will receive prompt attention. Under ordinary circumstances, very considerable delay is caused by the circuitous routes through which they are received.

Papers intended for publication, should be sent, *free of expense*, as early after the appearance of the Journal as possible, in order to be in time for the ensuing number. Such communications should be addressed to "CAREY & LEA, Philadelphia, for the Editor of the American Journal of the Medical Sciences."

All letters on the *business* of the Journal to be addressed exclusively to the publishers.

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A Historical Account of the Occurrence of the Asiatic Cholera in Hamburgh, &c. By J. C. G. Fricke, M. D. - - - - - - - 477

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MEDICAL SCIENCES.

Art. I. *Remarks on Spinal Irritation as Connected with Nervous Diseases; with Cases.* By Isaac Parrish, M. D.

In some late investigations on the obscure subject of nervous pathology, instituted by several eminent practitioners of Great Britain, an opinion has been advanced, and urged with considerable authority, that many chronic nervous disorders have a local and determinate seat in some portion of the spinal marrow or great sympathetic ganglia, and hence that these obstinate diseases are most effectually treated by applications directed to the spinal column.

I propose, in the present paper, briefly to notice some of the facts and arguments upon which this conclusion is founded, together with the pathological principles which it involves, and their application to the diagnosis and treatment of this extensive and obscure class of diseases. I shall then endeavour to illustrate the several points embraced in the inquiry by narrating cases, most of which have fallen under my own observation while fulfilling the duties of resident student in the Philadelphia Alms-house Infirmary.

In adverting to the obvious and acknowledged ignorance which prevails in relation to the nature of most maladies, which are supposed to reside solely in the nervous apparatus, and in considering the immense amount of moral and physical distress which they produce, every one must most seriously desire the establishment of some definite principles on which their treatment may be conducted.

Believing that the present vague and unintelligible notions on the pathology of neuralgic diseases, have arisen from the obscurity in which the normal functions of the nervous system have always been involved, it may be proper briefly to advert to late physiological dis-

coveries, which may admit of an important application in elucidating pathological phenomena.

It is only within a few years that the united efforts of Bichat, Bell, Magendie, Riel, Philip, and others, aided by experimental inquiry, and enlightened discrimination, have amassed a body of facts, the development of which has dispelled much former obscurity, and promise, if still pursued, to lead to most interesting results.

These authors have taught us to consider the nervous system not as a homogeneous tissue, possessing an identity of structure and function, and having for its only centre the *brain*, (an opinion for a long time entertained,) but as composed of separate parts, differing essentially from each other, both in their functional actions, and anatomical characters. Thus, to the brain and the nerves proceeding from it, have been assigned one set of actions; to the spinal marrow and its branches another; and to the sympathetic nerve and its tributaries a third.

Adopting this division as the basis of all correct pathological deductions, it is to be hoped that future investigations on the nature and seat of many nervous affections will assume a much more certain and satisfactory form. The credit of first commencing such a series of observations in reference to neuralgic diseases, is perhaps due to the English practitioners alluded to; the observations upon which their deductions are founded, I shall endeavour summarily to state.

In the year 1821 a short essay was published by Dr. R. P. Player, in which he called the attention of the profession to a connexion between spinal disease and neuralgic symptoms manifested in different portions of the body; this fact he was enabled to state from having for several years observed that tenderness on pressure over the spinal column, in a situation corresponding to the origin of the diseased nervous cords, was almost uniformly present; he further stated that he had long been accustomed to treat such cases by topical applications over the tender portion of the column, and that the uniform success of this practice had confirmed him in the opinion that the cases alluded to had their origin in the spinal marrow.

The essay of Dr. Player excited but little attention until the year 1828, when his views were abundantly confirmed by Dr. Brown, of Glasgow, in a paper which he published on "irritation of the spinal nerves." During the next year, in a highly instructive essay, entitled "observations on some forms of spinal and cerebral irritation," similar opinions were advanced by Dr. Darwall, who was followed by Drs. Teale and Tate, the former in a treatise on neuralgia, pub-

lished in 1830, and the latter in a work on hysteria, which appeared about the same time.

All these authors have insisted on the fact, that tenderness on pressure over some portion of the spinal column, is an attendant and prominent symptom in most chronic nervous complaints, and that a removal of this tenderness by appropriate external applications, constitutes the most important indication in the treatment of the accompanying nervous symptoms. For the truth of this assertion each author appeals to his own experience, and enforces the opinion by many well selected cases; all of which is considered by Teale as sufficiently conclusive to establish the following pathological axiom, viz. "that disease in the large nervous masses, as the brain and spinal marrow, is not so much evinced by phenomena in the immediate seat of the irritation, as in those remote parts to which the nerves arising from the diseased portion are distributed." This principle is supposed to be applicable to a very extensive class of nervous affections, all of which Dr Teale has proposed to designate by the general term of neuralgia, comprehending in this view not only those manifest affections of the nervous filaments characterized by pain, but many other conditions indicating an altered and perverted state of their healthy actions.

In thus assigning to this numerous and perplexing catalogue of diseases, a local and uniform situation, we are still uninformed as to the precise pathological condition which originates them, nor has it been explained in what manner tenderness on pressure should reveal the condition of parts, so firmly secured by bony and ligamentous attachments; if the fact be established, however, it is reasonable to infer the existence of some morbid condition, which, in the present uncertainty of our knowledge, may perhaps be appropriately designated by the term spinal irritation, or, as the same idea has been differently expressed, by "functional disorder of the spinal marrow."

If the preceding physiological and pathological views be correct, a most important change will be effected in the classification, diagnosis and treatment of the various modifications of disordered nervous action so frequently presented to the practitioner. These affections now designated by numerous unmeaning appellations, and described with nosological minuteness, will be comprehended under one general division, be distinguished by a few well-marked and prominent symptoms, and treated on plain and comparatively certain principles.

Considering the spinal marrow as the great centre for sensation and motion, the materials of which it distributes through its com-

pound nerves to those parts subservient to the will, we should expect to witness various spasmodic or painful affections of the voluntary muscles, occurring as a consequence of its primary or secondary disorder. Believing with the distinguished Sir CHARLES BELL that the fifth nerve possesses an identity of structure and function with the spinal nerves, though arising in the most superior portion of the column, irritation at its root would account for various perplexing irregularities in the sensations and movements of some of the muscles of the face to which it is so liberally supplied. Applying the same train of reasoning to similar affections of other portions of the economy dependent for their nervous power on the same great centre, we should expect to find them equally intelligible.

A still more important light in which the principle now under consideration may be examined, is in connexion with the intricate morbid actions, presumed to occur in the ganglionic system. Contemplating the sympathetic ganglia as the seat of the nervous influence by which the functions of the internal and vital organs are sustained—as presiding over the movements of the involuntary muscles—as exercising an obvious though inexplicable agency over the process of secretion, and the circulation of the vital fluid—we may hope in the progress of inquiry for the development of facts, that will dispel some of the obscurity at least, which is connected with a very extensive class of chronic functional disorders of internal organs, which, from their recondite nature, have defied the rigid scrutiny of the most renowned and successful cultivators of our science. The existence of spinal irritation in the diseases I have adverted to, is supposed to be evinced by spinal tenderness; this symptom being not only indicative of irritation in the spinal marrow, but also in the sympathetic ganglia; an inference drawn from the well ascertained anatomical connexions and physiological relations existing between these great centres.

Before adopting to the full extent the preceding opinions, it may be well to inquire, whether it is not possible for the trunks of nerves to be obviously and even violently affected with disease, without their centres or points of origin being in any degree implicated? It is to be regretted that this question has not been more critically examined by the several writers on spinal irritation, particularly as its consideration is so intimately associated with the adoption of their peculiar opinions. Dr. Darwall dismisses it by remarking that we have no evidence of the existence of diseases in the trunks independent of the centres, while he conceives that there is convincing proof of irritation in the centres giving rise to morbid influences in the parts which they

respectively supply. If tenderness on pressure be alone indicative of irritation in the spinal marrow or sympathetic ganglia, (and as far as I am aware this alone is to be relied on,) I am compelled to dissent from the proposition of Dr. Darwall, having witnessed several cases of neuralgia characterized by most unequivocal symptoms, in which on the most careful and repeated examinations, no tenderness could be discovered, and similar cases have been mentioned to me by physicians of accurate and extensive observation. Such occurrences should create caution in the exclusive adoption of opinions, though they may be sanctioned by the general tenor of observation.

Irritation of the nervous centres with their accompanying symptoms, may either occur, as an idiopathic affection, or may arise from a previous derangement in the functions of some organ or organs; thus an irritation may be primarily induced in the dental, gastric, or uterine surfaces, which by its continuance will be extended to the nervous masses, and thence be transmitted to distant parts; this position is exemplified by the fact of a decayed tooth being the cause of the most severe and protracted nervous complaints; or by referring to the complicated and distressing affections, passing under the names of hypochondriasis, melancholia, &c. which have obviously depended on a perverted action of the mucous surface of the alimentary canal; or by adverting to the anomalous and protean forms of disorder in young females lately so accurately traced to uterine irritation. The practical importance of this distinction between idiopathic and symptomatic spinal irritation will be more particularly noticed hereafter.

Before proceeding further, it may be proper to advert to some late highly interesting observations on the *peculiar* neuralgic affections of females, as described by Dr. Tate of London; this gentleman after an enlarged experience, has not hesitated to publish the opinion, that the appalling and anomalous symptoms presented in the hysterical female, are all capable of being referred to an irritation existing in some portion of the spinal marrow, originally induced by a disordered condition of the uterine function. He was led to this conclusion by observing, that tenderness on pressure over the spinal column, was a uniform attendant and characteristic feature of these complaints, connected almost uniformly with *pain under the left breast*, and palpitation of the heart. These four symptoms, viz. disordered menstruation—spinal tenderness, most generally evident over the upper dorsal vertebræ—pain under the left mamma, and sometimes under the right—and palpitation of the heart, may be distinguished among a multitude of frightful appearances in almost all cases of chronic nervous disor-

der in young females, and when they are conspicuous Dr. Tate considers them as characterizing a peculiar and distinct disease, which, to avoid confusion, he has proposed to call hysteria.

Without entering into a detail of the process by which Dr. Tate has arrived at this conclusion, I shall merely state the result of my own observations in reference to his peculiar opinions.

While practising in the Alms-house, I had frequent opportunities of examining cases similar to those described by Tate; some of these were of long duration, and of most intractable character; in all of them my attention was directed to the discovery of these symptoms, which I have almost invariably found to be prominent features in the case; the pain under the left breast is particularly striking, and should alone lead us to suspect the character of the case. The importance of establishing a few diagnostic symptoms, whereby these perplexing cases may be recognised, is sufficiently obvious. More enlarged experience must determine whether those mentioned by Dr. Tate are to be relied on.

By reviewing the preceding observations, it will be perceived that, (according to late writers on spinal irritation, an outline of whose opinions I have attempted to present,) by a disorder in the normal actions of some portion or the whole of the spinal marrow and sympathetic ganglia, either occurring primarily or induced by some pre-existing irritation, symptoms are manifested in different tissues, producing diseases distinguished by numerous appellations, though usually described by nosologists under the class neuroses; and further, that all these complaints are susceptible of being reduced to the two terms of neuralgia and hysteria, the former being applicable to them as occurring in males, and the latter in females.

The introduction of such a system of generalization is, indeed, a bold innovation upon general usage, and established authorities, while its adoption, founded on the firm basis of fact and observation, would form a very important epoch in the history of practical medicine; it has, however, yet to undergo the ordeal of a sound and discriminating experience.

There is still another light in which morbid derangements of the nervous centres may be viewed with peculiar interest, viz. in connexion with the complicated symptoms of fever.

When we contemplate the wide range of sympathies, in the production of which the great sympathetic nerve is supposed to be the sole agent, and the influence which it must exercise in the production and maintenance of all general or constitutional diseases, we cannot fail to admit its great importance in pathological investigations. That

its normal functions are materially deranged in fever, no one can doubt, who reflects on its primary symptoms, paroxysmal nature, the disturbance of the circulation, the depravation of the secretions, &c. Some very interesting observations, tending to elucidate such a connexion, have lately been published by Dr. Griffin, an experienced practitioner of Limerick. These observations were confined principally to cases of chronic intermittent fever, many of which fell under his care in the practice of a large public dispensary; he reports many cases, in which, being unable to effect a cure by the ordinary tonic remedies, he was induced to examine the spinal column, which was invariably found exquisitely tender in some part of its course, in relieving which, by the ordinary revulsive applications, he declares that his success has been highly satisfactory. Dr. Griffin supposes, that the spinal marrow and sympathetic nerve are simultaneously disordered in these cases, and he designates this peculiar pathological condition by the term functional disorder of the spinal marrow.

It now remains for me to indicate the principles of treatment, founded on the foregoing considerations, and the circumstances under which they may be most advantageously applied. Being called to a case, and having ascertained the existence of spinal tenderness, of general nervous derangement, &c. our inquiries should be directed to the original cause of the attack, which will usually be found to exist in some functional disturbance of one or more of the internal organs. Under such circumstances, two prominent indications are presented—first, to remove spinal tenderness; and secondly, to correct the existing disturbances in the functions of important organs. The importance of this precept is evident, for though we may remove spinal tenderness, and thus terminate for a time the neuralgic symptoms, yet if the primary irritation be suffered to continue, their renewal on the application of slight causes may be reasonably apprehended; and conversely, if by appropriate means we should correct the primary disordered action, which has, through the channel of the nervous centres, produced such general derangement, without at the same time by revulsive measures, relieving these irritated points, our efforts would be alike unavailing.

I wish particularly to notice the external applications proposed for the relief of spinal tenderness; the other part of the treatment, though equally important, admits of too many modifications as applicable to a great variety of cases, to allow me to enter into their examination—some of them may be collected from the cases mentioned hereafter.

The means chiefly relied upon for the removal of spinal tenderness, are of three kinds, viz. local depletion by cups or leeches to the affected part, blistering either prior or subsequently to local depletion, and the application of the tart. emetic, until its peculiar effects are produced. Local depletion has been strongly recommended by nearly all the authorities, and particularly by Teale, who states—that he has, by frequent cupping or leeching to the tender part, relieved the neuralgic symptoms, without the necessity of resorting to additional revulsive measures. Tate, on the contrary, discards both local depletion, and blistering—considering them quite ineffectual, and relies solely on the more powerful and permanent impression produced by the tartar emetic.

Such a diversity of opinion on so important a practical point may, at first view, appear irreconcilable, but I apprehend it may be satisfactorily explained by referring to the general character of the cases as described by these writers. In the more simple forms of neuralgia, where the spinal irritation is either an idiopathic affection, or has been induced by slight causes, and where the general system has not become seriously implicated, (conditions connected with the generality of cases noticed by Teale and several other writers,) local depletion and blistering, either alone or combined, will generally be found effectual, though in many, even of these cases, a long perseverance in this plan will be demanded.

In the hysterical forms of the complaint supposed by Dr. Tate to be originally dependent on uterine disorder, in which from the neglect, (arising perhaps from the supposed triviality of the symptoms,) the nervous functions have become deeply and generally impaired, the applications must be proportionably active, and it is under these circumstances that the tartar emetic from its powerful and permanent action is peculiarly appropriate.

In the use of this irritant, however, considerable caution should be observed, particularly if it be applied over an extensive surface; in some individuals who either from natural predisposition, or from the protracted operation of disease, have acquired a peculiarly sensitive temperament, it cannot be endured; several instances have fallen under my notice in which the most severe constitutional irritation has accompanied its use,* and in one case a violent and alarming convulsion appeared to be produced by it: should a part of the spine be

* I believe it will generally be found that the nervous symptoms are increased as the pustulation advances, and that they diminish as it declines.

extremely tender, as is often the case, the ointment or plaster should be applied in its vicinity; this remark will also apply to cups or blisters.

Several methods of applying the tartar emetic have been proposed; the ointment composed of tart. emet. ʒij., cerat. simp. ℥j. I have often found ineffectual, owing I presume to the small quantity of the active ingredient in its composition—the plaster made by sprinkling the crystals on common sticking plaster softened by heat, is perhaps the best mode of application. In the employment of either of these modes, I have found a great difference in its action upon individuals, in some patients an eruption may be induced in twenty-four hours, while in others several days are required to produce a similar effect. The pustules are generally so painful, as to require that mild opiates should be occasionally administered during their course; should the irritation threaten serious consequences, soothing applications should be resorted to. I have found the mucilage of slippery elm, to be particularly useful.

Where the case is not sufficiently severe to justify the employment of either of the preceding applications, or where from the suddenness of the attack, it is desirable to produce a speedy impression in the vicinity of the spinal marrow, frictions down the spine with spt. terebinth. either alone or diluted with some unctuous matter, or a decoction of capsicum in brandy, with other similar articles will be found highly beneficial. This practice has long been advantageously employed in the treatment of the convulsions, and other spasmodic affections of children.

Before closing these remarks on the application of revulsives to the spinal column, it may be proper to inquire, whether we are to restrict our employment of such means, to those cases only in which spinal tenderness is evident. If such a practice be applicable to all cases of "nervous disease," and if it be proved that such cases do exist independent of an irritation in the spinal marrow, (an opinion highly probable,) the conclusion is obvious. I am disposed however to carry the application of revulsives to the spinal marrow much further, extending the practice to most chronic local disorders, where it is desirable to procure a revulsive action, as for instance, in chronic inflammation of the eye, Schneiderian membrane, &c. &c.

If it be true that the establishment of an irritation in one part, tends to relieve a preëxisting morbid action in another, by abstracting from it that superabundant portion of nervous influence by which its morbid processes are sustained, is it not rational to infer that the nearer such counter-irritation be applied to the great reservoirs of

nervous power, the more permanent and effectual will be its operation?

Having now endeavoured to delineate the leading features embraced in the doctrine of spinal irritation as connected with nervous or neuralgic diseases, it remains for me to narrate such cases as may tend to illustrate the several principles advanced. In doing this, I must acknowledge the kindness of several of my colleagues in the Almshouse, who have always been disposed to render me their assistance in investigating this interesting subject.

The following case presents an example of one of the most simple and ordinary forms of neuralgia, referable to irritation in the upper or cervical portion of the spinal marrow.

Case I.—Mary Bancraft, aged about forty years, of robust frame and plethoric temperament, applied to me concerning an unpleasant complaint, which had troubled her for more than a year; her symptoms were pain and stiffness in the back of the neck, increased by revolving the head, with occasional severe shooting pains in the neck, breast and occiput, often extending down the upper extremities to the ends of the fingers and sometimes causing a complete obliteration of feeling in these parts, so that she was often unable to hold her needle, or pursue any occupation for several days; general health unimpaired, has undergone no medical treatment except being often bled, which usually afforded temporary relief.

On examining the spinal column, I found acute tenderness on pressure over the cervical vertebræ, and on firm pressure she cried out, with severe shooting pains, extending to the ends of the fingers.

March 27th.—Six cups were applied over the tender part, followed by a blister, which was kept discharging for several days; during this time the shooting pains had entirely ceased; the blister being allowed to heal, her feelings were much improved, and she could use her needle with facility. I frequently saw her after this time, and found that she remained free from her former attacks.

The following cases differ from the preceding in the neuralgic pains being in the lower extremities, and the spinal tenderness in the lower portion of the column; it will be observed, however, that in Case III. no spinal tenderness could be discovered, though the beneficial effect of applications over the origin of the affected nerves was most strikingly evinced.

Case II.—Mary Ann Ledden, aged nineteen, of delicate, nervous temperament, admitted Dec. 4th, 1832. Her symptoms were severe

shooting pain in the lower limbs, unattended with increased heat or tumefaction in the part, and without much constitutional disturbance. She had been treated for rheumatism by the ordinary antiphlogistic measures which seemed rather to increase her sufferings. At the time I saw her she was confined to the bed, being unable to move her lower limbs, without experiencing acute pain. On examining the spinal column, I found most acute tenderness on pressure over the lower dorsal vertebræ, shooting pain through the limbs being induced by the examination. Cups were directed to the affected part, which were in a few hours followed by a blister, to be dressed with stimulating ointment. Under this treatment she improved rapidly; in a few days the blister was allowed to heal, and on the 18th, she was free from complaint.

Case III.—Jane Beck, aged thirty-one years, was admitted into the infirmary, Sept. 17th, 1831. She stated, that about a year since, she became "irregular," since which time she has been "nervous," and subject to violent paroxysms of pain in the limbs, occurring with great severity at her accustomed menstrual period; during the last few weeks her complaint has been rapidly advancing, and at the time of her admission, her lower extremities were so completely powerless, that she was unable to change her position in bed without assistance. These symptoms were unaccompanied with any febrile movement, or other evidence of constitutional disorder. The spinal column was carefully examined, but no tenderness could be discovered at any point. Free depletion by cups from the lumbar region was alone directed.

18*th*. No change in symptoms.

19*th*. The cupping was repeated in the morning, and produced striking and speedy relief.

20*th*. Was so much improved as to be able to rise without assistance; and in a few days she recovered the accustomed use of her limbs; no return of the paralysis took place, though she suffered for several months with nervous symptoms dependent on amenorrhœa, of which she was finally relieved by a restoration of the healthy uterine functions. For a knowledge of this interesting case, I am indebted to my friend, Dr. A. S. Hill, under whose care it occurred.

For the following case I am indebted to my friend, Dr. A. A. Woodhull.

Case IV.—Rebecca Jones, aged fifty-one, admitted into the women's medical ward, Nov. 15th, 1831. She informed me that she

had been for a long time a sufferer from a severe shooting pain in the left thigh, which, from examination, I found to follow the course of the great ischiatic nerve. So severe was the soreness in the muscles of the thigh, as to oblige her to use a crutch in walking, and sometimes to confine her entirely—general health unimpaired—states that much has been done for her; she has been repeatedly cupped and blistered on the limb, with slight temporary relief. Spinal column acutely sensible from the lower dorsal to the last lumbar vertebra; firm pressure causing severe shooting pain down the limb. On the day of admission a blister was directed over the tender part.

17*th.* The blister has drawn well, and produced most striking relief. She is entirely free from her accustomed pain—blister allowed to heal.

25*th.* Walks about without any assistance; has had no return of pain—no spinal tenderness.

Dec. 12*th.* Discharged.

The effect of treatment directed to the spinal column in relieving chronic nervous pains attacking different parts, and usually designated and treated as rheumatic, is most satisfactorily evinced in the following case, which, through the kindness of my friend, Dr. Woodhull, fell under my notice during the last winter.

Case V.—William Davies, a coloured man, aged thirty-three years, admitted into the Alms-house, Dec. 6th, 1831. Stated that for the last year, he has been confined with "rheumatism," which has been so general and severe as to prevent him from pursuing any occupation. During the greater part of this time he has been in the Alms-house of the county in which he resided, and has there undergone a great variety of medical treatment; "has taken a great many drops of different kinds," and has been repeatedly cupped and blistered over painful parts; had at the time of his admission several issue peas in his arm, which had been kept discharging for a long time. Notwithstanding this treatment, his disease remained stationary, on which account he was induced to come to Philadelphia. At the time of his admission into the house, he was unable to walk without great pain, and his general health was much impaired from long confinement.

The spinal column was found acutely sensible throughout its whole course, and by pressure at particular points, shooting pain was induced in the course of the nervous chords; bowels constipated; tongue furred; pulse pretty full and active. Directed a brisk cathartic to be administered in the evening; and cups to be applied from the neck to the sacrum.

27*th.* The medicine operated freely, and the cups had abstracted about ℥xii. of blood; expresses himself very much relieved, having had a longer respite from pain than at any time for the last year. Slept well during the night, and is able to move the limbs freely. With a view of more completely acting upon the disease, a blister was applied down the spine—after the operation of which, he was able to walk about, and was completely restored to his former health.

The following presents a more complicated and lengthened train of symptoms, probably dependent on an irritation, both of the spinal marrow and sympathetic ganglia.

Case VI.—Martha Garwood, aged thirty-seven years, a valuable nurse attached to the Alms-house, was attacked during the last summer with dysentery, which assumed a chronic form, and obliged her to submit to a strict medical treatment for several months. In the autumn, the dysenteric symptoms had completely subsided, though her general health was much impaired. She was frequently attacked with severe spasmodic pains in the stomach and bowels, sometimes with dyspnœa, resembling a paroxysm of asthma, together with violent neuralgic pains in the breasts, head, shoulders, &c.; appetite and digestion impaired, tongue thickly coated, pulse feeble and frequent, catamenia regular, spirits depressed—is much emaciated, and has almost despaired of recovery—her nervous symptoms have been very violent for several weeks, and a great variety of remedies have been ineffectually employed for their relief.

Oct. 24*th*, 1831.—On examining the spinal column, acute tenderness on pressure was particularly obvious between the fourth and fifth dorsal vertebræ, extending in a greater or less degree to the lower part of the back; on making firm pressure at the most sensitive part, the stomach was immediately thrown into painful action.

A tartar emetic plaster was at once directed to the most sensitive part, with the use of the following combination:—℞. Mass. ex. hydrarg. ℥j.; pulv. g. opii, grs. xv.; pulv. rad. ipecac. grs. x.; M. ft. pill. No. xxx. u. q. s. h. Diet to be light and nutritious, and the recumbent posture to be strictly observed.

26*th.* A fine crop of pustules has appeared, since which, she has been greatly relieved; the countenance has assumed a cheerful expression, and she has not been troubled with any of her usual pains or spasms; tongue is cleaning; discharges more natural; appetite good.

The pills were discontinued, and the eruption allowed to decline—

no further treatment was adopted, except to advise a careful regulation of the diet, attention to the bowels, &c.

In a few days she was attending to her accustomed duties, and has since enjoyed as good a state of health as is compatible with her arduous avocation.

Case VII.—Jacob Clouts, an old resident in the Alms-house, was attacked July 13th, with violent spasmodic pain in the stomach and bowels, attended with nausea and most copious vomiting of bilious matter, with constipation of the bowels. He has been subject to similar attacks for several years, which have usually proved very obstinate, and have, on several occasions, placed his life in imminent danger; in several of these attacks which I had witnessed, the most powerful antiphlogistic and relaxing measures, (as venesection, warm bath, tartar emetic enemata, &c. &c.) had been resorted to, with a view of overcoming the spasms and constipation, without producing their ordinary effect. With a knowledge of this fact, I determined to pursue a different course. On examining the spinal column, most acute tenderness was evident between the sixth and tenth dorsal vertebræ, firm pressure producing violent pain in the stomach, with a disposition to vomit; so distressing was the sensation produced by pressure, that the patient strenuously opposed a repetition of the examination. Cups were immediately applied to the tender part; during the operation the vomiting and pain ceased, the patient became tranquil, and in a short time after the cups were removed, he fell into a refreshing sleep, which continued for several hours.

14*th.* Some return of pain this morning, bowels still constipated, spine tender; directed a tartar emetic plaster to the tender portion of the spine, a stimulating enema, mucilaginous diet, &c.

15*th.* Injection had operated freely, nausea and spasms much relieved, tartar emetic very painful.

16*th.* Eruption has appeared, is entirely free from pain, appetite and digestion as good as usual.

The following case of sickness of stomach occurring in a nervous female, is one of frequent occurrence, and will I think be generally found to yield to the plan here proposed, where the ordinary internal remedies have failed.

Case VIII.—Debby Allibone has been troubled for several months with a complication of nervous symptoms, probably dependent on disorder of the uterine function. One of the most distressing accom-

paniments of her disease, is an irritable state of the stomach, producing frequent attacks of vomiting, an indisposition for food, &c. On visiting her in the evening I found that the irritability had been for several days unusually severe, resisting all the usual antacid remedies, together with stimulating applications to the epigastrium; the stomach was now so sensitive that she was unable to retain even a tea-spoonful of cool water; the case being obstinate, I was induced to examine the spinal column; on making firm pressure about the fourth dorsal vertebræ retching and nausea were immediately induced. Dry cupping was at once resorted to, with speedy relief, and to produce a more permanent impression, a blister was directed over the tender part. In the morning I found the sickness entirely relieved, vesication had been induced, and the patient informed me that she had taken a hearty breakfast without inconvenience.

The following case was kindly furnished by my friend, Dr. H. Bond; it is rendered peculiarly interesting on two accounts—first, from the prompt and striking relief of the remedies employed upon a remarkably obstinate and protracted disease; and secondly, from the circumstance of counter-irritants to the spinal column relieving an ophthalmia which had resisted all the usual remedies employed in such cases; does not this last circumstance afford some support to the opinion which I ventured to advance, while on the subject of counter-irritation over the spinal column, as applied to diseases generally?

Case IX.—Sept. 11th, 1830.—I was called to see R. R. clerk in a counting-house, aged twenty-three years, of a light complexion, delicate form and highly nervous temperament, belonging to a family who have shown some tendency to mental alienation. He informed me that about five years since, he was severely affected with tic douloureux; and that he had been dyspeptic for the last two years, has tried every remedy he could hear of, twice consulted a very eminent physician, has taken four bottles of Swaim's panacea,* from neither of which has he been sensible of any benefit; so much discouraged was he at the ill success attending the means employed, that he had concluded to leave the disorder to take its course; but on account of a distressing vomiting I was requested to visit him; at this time he was much emaciated, weighing about ninety pounds, which he says is thirty-five or forty pounds less than his ordinary weight.

His bowels are usually torpid, and his stomach so irritable as to

* While taking the panacea, his gums became sore and tender, and nothing he said would convince him, that it did not contain mercury.

oblige him to live on a very spare diet; he has had also a slight cough of long continuance, attended with very little expectoration.

When I arrived at his lodgings this afternoon, I found that he had been vomiting frequently during the day, that he had experienced a slight rigor in the morning followed by fever, tongue covered with a thin white coat, mouth tender and breath offensive, head-ache confined to the left side, pain and tenderness in the epigastric region, pain in the left side about the sixth rib, some tenderness over the whole abdomen, feet cold and spirits dejected. Upon examining the spine, I found a very tender spot about the seventh dorsal vertebra, and on pressure, pain in the stomach and instant vomiting was induced. Directed pediluvium, anti-emetic mixture, and simple drinks in small quantities.

12*th.* Had a very restless night, having derived no very evident benefit from my prescription; the spine was again examined with a similar result as on the day preceding. I directed a plaster of antimon. tart. seven by two and a half inches to be applied to the spine. In the afternoon he had another slight chill and fever.

13*th.* Had a restless night, very little mitigation in the symptoms, except that the vomiting has ceased:—℞. Sulph. quin. grs. vj.; opii pulv. gr. j. M. ft. pill. No. vj.—Take one every three hours.

14*th.* Plaster is acting, but not sufficiently to be removed, rested better last night, has no head-ache or sickness of the stomach, but the sight or idea of food is disgusting to him; has taken but three of the pills, having had several stools attended with griping which he attributed to them. Drink, milk and water boiled together with a small quantity of magnesia added.

15*th.* 9 A. M. I found him cheerful, without head-ache, and nearly free from tenderness in the epigastrium or other part of the abdomen, rested well during the night. The plaster had produced so much irritation that it was removed in the evening. To my question whether he had been able to eat any thing, he replied that he thought he had taken as much breakfast as I had, with a good relish, and without any distress, enumerating among other articles a small piece of sausage, although he had taken no animal food since April, except a small piece of boiled chicken on the 10th inst. to which he attributed the attack of vomiting.

Take three pills daily, and rub the spine twice a day with the following liniment:—℞. Ol. oliva. ℥jss.; spts. tereb. ʒvj.; ol. lavend. ʒj. M. ft. liniment.

16*th.* Dined yesterday and to-day on beef; he continues to have an appetite which he indulges moderately with impunity. Tongue is

clean, the breath has lost its offensiveness, and the mouth much of its tenderness, bowels soluble, no return of chills, continue the liniment and take one of the following pills three times a day:—℞. Sulph. quin. grs. xij.; aloes, grs. x.; opii pulv. grs. ij.; M. ft. pill. No. xij.

20th. His appetite continues good, and since the 15th nothing which he has eaten has oppressed him; tongue clean; bowels regular; no tenderness on examining the spine; is now complaining of ophthalmia, chiefly confined to the tarsus. The inflammation appeared to commence in the lids and extend to the ball, and in several days a considerable ulcer was discoverable on the cornea, equal in size to the section of a pea. This continued without any sensible improvement until the 5th of December; from the 20th of September to that time, I used every remedy that had any reputation in such cases—repeated venesection, leeching, and scarification in the early stage; blisters, caustic, purgatives, low diet, anodynes, mercury, collyria, ointments, &c. &c. and all with very little benefit; the pain in the head and breast accompanied the inflammation of the eye.

December 5th.—I directed in the evening empl. tart. antimon. ten by two and a half inches, to be applied to the upper part of the spine. On the morning of the 7th, when the plaster began to draw, there was a very evident improvement in the eye. The plaster was removed on the 8th, as sufficient pustulation was produced. I find the following language in my minutes of that date. There is a truly astonishing change in the aspect and feelings of the eye since the plaster began to take effect; the redness has almost entirely disappeared; dimness is diminishing; much greater tolerance of light; and the ulcer is healing most rapidly.

December 14th.—The eye has continued to improve; the dimness diminishing, and every unpleasant sensation having left it.

But within three days his appetite and strength have begun to fail, and the symptoms which afflicted him during the summer show a disposition to return. By the use of empl. tart. antimon. and other means, he was, however, so far recovered that I discontinued my visits early in January.

Another case of disease in the organ of vision fell under my notice in the Alms-house, in which counter-irritation to the upper portion of the spinal column appeared to afford relief, while similar applications in the immediate vicinity of the eye had proved unavailing.

Case X.—Jasper Moylan, seaman, aged forty-three years, was admitted into the eye ward, November 7th, 1830. He was at this time labouring under a dimness of vision, amounting almost to total blind-

ness, which came on suddenly after sleeping with his face toward the sun on the deck of a vessel. The case was pronounced gutta serena, and he was repeatedly blistered to the temples and behind the ears, and moxas had been applied in the same situations, though with but little benefit to his disease. In the early part of March he fell under my care; at this time his sight was so defective that he was unable to distinguish any object clearly; the tongue was foul; bowels constipated. He was at once directed to take of mass. hydrarg. grs. v.; one pill every other night, with a gentle laxative in the morning, and a blister was applied large enough to cover the cervical vertebræ. On visiting him about twelve hours after the application of the blister, I could perceive a favourable change in his vision. The alterative treatment was continued, and the blister directed to be kept discharging.

Under this plan the sight improved rapidly, so that in a few days he could discern the figures on the yard clock, twenty or thirty yards distant from the ward; the tongue became clean, and the bowels regular.

The blister was kept discharging for several weeks, and his system invigorated by mild tonics, exercise, &c.

April 8th.—Was discharged, enjoying his vision as perfect as ordinarily. I neglected to notice in this case the condition of the iris.

It may be proper to remark in this place the connexion between spinal irritation and the nervous affections of the respiratory apparatus, characterized by their spasmodic nature, and the absence of the usual evidences of inflammation, or other organic derangement, as pertussis, spasmodic cough, asthma, &c. &c.

Tenderness in the upper portion of the column is alleged by some recent authors to be a uniform attendant on these obstinate complaints, and hence they have recommended the frequent employment of local depletion, blistering, &c. to the back of the neck, as the most rational and successful mode of treating them. How far such a conclusion may be supported by facts, my own observation will not enable me to determine. Though I have seen several cases of this description materially relieved by applications addressed to the part proposed. A very interesting case was related to me by Dr. Jackson, which offers strong support to the efficacy of such a practice; and should serve to direct our attention to an examination of the spinal column in doubtful or obstinate cases.

The patient was a young lady of delicate constitution and nervous temperament, who came under the care of Dr. Jackson during the last summer. He was informed that she had been troubled for the

last year with a dry, hacking cough, attended with dyspeptic and nervous symptoms: she was now much emaciated, and supposed by her friends to be in a confirmed consumption. The doctor was unable to discover any organic disease of the lungs, and directed some palliatives, an attention to the use of air and exercise, &c. Finding in the course of a few weeks that the symptoms became still more alarming, and not being able to discover the cause, he was induced to examine the spinal column; acute tenderness on pressure was evident from the lower cervical to the middle dorsal vertebra. The part was several times cupped, with relief to the cough and other symptoms, after which the tartar emetic eruption was induced.

While the process of pustulation was advancing, the sufferings of the patient were greatly augmented; as it declined, however, the cough ceased, the appetite became good, the general health and spirits were surprisingly improved, and in a few weeks the patient was perfectly restored to health. But little medicine was administered internally throughout the treatment; she was directed to assume the recumbent posture while the tartar emetic was acting.

Hysteria.—The two following cases have been selected from among many others of a less violent character, which have fallen under my notice; they will serve perhaps to illustrate the most complicated and severe form of this frightful complaint, and to evince the efficacy of the remedies employed. For Case I. I am indebted to my friend, Dr. R. D. Moore, under whose care it occurred.

Case I.—Mary Hall, aged twenty-three years, of intemperate habits, has been confined for the last year, with a partial paralysis of her lower extremities, together with many nervous symptoms, which occur at intervals; is subject to frequent attacks of mania, convulsions, &c. She was admitted into the Alms-house in the summer, and has since undergone a variety of medical treatment, without obtaining any permanent relief; was not sufficiently intelligent when I was called to her, to give any account of the commencement or probable cause of her disease, though it is probably dependent on uterine disorder, as she has had no menstrual discharge since admission.

Dec. 5th, 1831.—Was attacked with an unusually violent paroxysm of mania, for which she was sent to the cells; she was alternately singing, talking, and laughing in a most boisterous manner; her lower extremities were powerless, while the upper parts of the body were convulsed, the fæces were passed involuntarily, skin cold and clammy, pulse small and corded, tongue thickly coated, head hot.

Ten leeches were directed in the evening to the back of the neck, cold applications to the head, mustard plasters to the feet, and ten grains of calomel to be given at once.

6*th.* Calomel had operated several times, convulsions still frequent, has slept none since admission. Repeat leeching and mustard plasters, and apply dry cups from neck to sacrum—give two grains of calomel every two hours.

12 M. No improvement—apply tartar emetic plaster, three inches wide, to extend from the lower cervical to the last lumbar vertebra, repeat the leeching every morning until further directions, and continue calomel powders.

7*th.* More composed, slept about an hour during the night, tongue cleaning, convulsions still frequent—use frictions with the flesh brush, and continue other treatment, diet bland, but nutritious.

8*th.* More composed than at any time since admission, slept three hours during the night, skin, pulse, and tongue more natural, discontinue calomel, and give a dose of senna tea—plaster has produced considerable irritation.

9*th.* Still remains quiet—continue treatment.

10*th.* Has had but one convulsion for the last four hours.

11*th.* Slept nearly all night, having had but one convulsion, mind much more rational, plaster has been removed, having produced copious pustulation.

12*th.* Still improving, takes food with a relish, can move one of her toes.

13*th.* Slept well during the night, complains much of the eruption.

14*th.* Continues to improve under the treatment.

20*th.* Moves the feet with ease—omit the leeching.

22*d.* Can draw the leg upon the thigh, and is improving rapidly in strength, mind perfectly clear.

27*th.* Can walk across the floor without help, and states that she feels better than at any time since her admission into the house—back still sore.

Jan. 1*st*, 1832.—Appetite and spirits good, mind clear, is rapidly increasing in flesh and strength.

5*th.* Her health appears now quite established, menstruation has returned, and her appearance is totally changed; discharged from further medical treatment.

Feb. 28*th.* Still remains in good health.

Case II.—Ann Divine, aged thirty years, of a delicate frame and nervous temperament, states, that about three years since, she was

attacked with a violent pain in the ball of the great toe, which gradually involved the ankles, knees, hips, arms, &c. finally attacking the muscles about the chest and face, impeding respiration and deglutition;—these symptoms existed in a greater or less degree for about twenty months, at the end of which time, the disease became concentrated about the muscles of the face, along the course of the lower jaw, in the temples and upper part of the scalp, in which situation she was liable to the most violent and repeated attacks of pain. She was now admitted into the Pennsylvania Hospital, where she remained for a year, under a great variety of medical treatment, all of which appeared to produce but little effect upon the disease, though she experienced great relief during the paroxysms, from the introduction of needles in the vicinity of painful parts. She was discharged from the Pennsylvania Hospital as an *incurable patient*, in the spring of 1829.

About two months after this period, she was admitted into the Alms-house, where she was variously treated by the different physicians in attendance for several months, without experiencing any permanent benefit.

Dec. 16th, 1830.—Came under the care of Dr. E. F. Rivinus and myself; she was now a complete martyr to suffering, and had given up all hope of restoration. She had been under no medical treatment for several weeks. Her jaws were so firmly locked, from the contraction of the adjoining muscles, that she was unable to masticate, and was obliged to subsist on fluid aliment; her paroxysms of pain were still frequent, and so violent as to convulse the whole body. On examining closely in reference to the catamenia, it was found that the discharge was regular, though depraved and deficient in quality, and that the neuralgic pains increased as the "period" approached: the spinal column was found tender throughout its whole course, and quite sensitive towards the union of the lumbar vertebræ with the sacrum. Under these circumstances, we concluded to treat the case as one of hysteria, as laid down by Tate. A mercurial purgative was administered, which operated freely, after which the following was directed, with a view of acting on the uterine functions.—℞. Pulv. gum. aloes, grs. xxiv.; carb. ferri, ʒss.; ol. menth. pip. gtt. iii.; M. ft. pill. No. xij. One to be taken three times daily; a hip bath was also directed to be taken every night, and continued until the next menstrual period. The ungt. tart. antimon. ʒij. to ℥j. of cerat. simp. to be rubbed down the spine from neck to sacrum every four hours, until an eruption should be induced.

Dec. 23d. A copious pustulation, and the patient expresses herself

as much relieved; the jaws are more pliable, and her "constant pains," as she terms them, are much diminished.

27*th.* Is still improving, is able to eat animal food without inconvenience, though she is obliged to be slow and cautious in mastication; spirits much improved.

30*th.* Feels her constant pains daily diminishing; continue treatment.

Jan. 2*d*, 1831.—Had a paroxysm of pain, which was much shorter and less severe than usual.

3*d.* Feels as well as before the paroxysm; eruption declining in some places; directed the further application of the ointment.

14*th.* Has been steadily improving until last night, when she had a severe convulsion, which was attended with but little pain, except in the back, which is very thickly covered with pustules. I believe the attack was referable to this cause.

21*st.* Has been advancing since the 14th; eruption still pretty copious.

25*th.* Improving daily—left her in charge of Drs. Keith and Mead, who continued the same treatment, until we had the satisfaction of finding that a healthy menstruation was established, from which time her health and spirits were reïnstated, she was able to take exercise in the open air, her pains gradually left her, and she was discharged July 27th, 1831, after a most suffering confinement of nearly four years.

I have frequently seen her since she left the house, and find that she has had no return of this distressing complaint, and though her constitution still remains delicate, she is able to perform the duties of a domestic, to the satisfaction of her employers.

In reviewing all the information now before the profession on the connexion of spinal irritation with nervous diseases, it may perhaps be summarily stated—

First. That tenderness on pressure in some portion of the spinal column is an attendant on many chronic neuralgic affections, and that by relieving it in the manner proposed, these complaints are either entirely eradicated, or temporarily suspended.

And secondly. That the precise indications, which this circumstance affords, are not sufficiently well understood at the present time, to justify the establishment of any definite pathological principles applicable to the whole class of neuroses.

The subject certainly offers the highest inducements for further investigation, whether considered in its pathological or practical application.

Philadelphia, 1832.

ART. II. *Case of Osteo-sarcoma of the Lower Jaw, successfully treated by Amputation of that Bone.* By WILLIAM W. ANDERSON, of Stateburg, South Carolina. (Communicated by Professor GIBSON.)

ABOUT the middle of December, 1829, I was requested by Colonel S. to examine one of his negro men, (Tom, an African,) who was suffering great pain and inconvenience from a large tumour of the lower jaw, and to give my opinion whether or not it could be successfully removed by an operation. The plantation where the negro lived being sixteen miles from Stateburg, it was not convenient for me to go so far until the last of the month, when I went to see him, and discovered his disease to be an osteo-sarcoma of the lower jaw of great size, and of twelve or thirteen years standing. Tom was about forty-five years of age, in other respects healthy and possessed a robust and strong constitution. When the disease first made its appearance he was hired out on a neighbouring plantation, and his master did not know in what manner it commenced; but according to his own account it was occasioned by a severe blow which he received on his jaw. It continued small and grew very slowly for several years, after which it frequently broke and discharged an ill-conditioned and fœtid humour and increased rapidly. At this time the tumour extending from the next to the last molar tooth on the left side, to the angle on the other, involving nearly the whole of the lower jaw in the disease; but the great body of it lay on the right side and in front of the mouth. The chin entirely deformed, projected ten inches beyond the neck, distending and protruding the under lip so far beyond its natural position, as to make it impossible for him to shut his mouth. The tongue was raised up and pushed from its place to the left side of the mouth, and confined in such a manner as to make deglutition difficult and render his articulation so indistinct that he could scarcely be understood. Externally the tumour presented a pretty even and uniform surface with the exception of some fistulous openings and the scars of others which had healed; but that portion of it which was to be seen within the mouth was very irregular, having deep indentations and fissures running in different directions and openings, which were constantly discharging their fœtid matter mixed with saliva. All this portion of it was of a deep florid colour. Altogether the disease exhibited a loathsome and frightful appearance, and rendered the life of the poor negro almost insupportable. The extent and difficulty of the operation were explained to him; being at the same time encouraged by the probability of its successful termination;

he readily consented to have it performed. He was accordingly sent to me in a few days, and on the 14th January, 1830, in the presence of Dr. Richard Anderson, of Chesterville, Dr. Yates of this place, and several spectators, and particularly assisted by Dr. E. H. Anderson of Camden, I removed the tumour in the following manner.

Being seated in a chair and his beard shaven, the dimensions of the tumour were first taken. From the lobe of one ear to that of the other across the chin, it measured eighteen inches; from the lobe of the right ear to the termination of the disease on the other side, fifteen and a half inches; and from the trachea to the edge of the lower lip, ten and a half inches; and when removed, weighed within one ounce of three pounds.

The operation was commenced by making an incision from the side of the neck on the right side to the angle of the jaw on the left, passing under the chin in such manner as to ensure a large flap, which was dissected down to the neck. Then another incision was made between the same points, following the direction of the jaw, passing some distance below the angles of the mouth, and leaving out all that portion of the skin which had become diseased—another flap was formed by dissecting the integuments from the upper side of the tumour. It is worthy of remark, that the chief difficulty occurred in performing this part of the operation, occasioned by a profuse hæmorrhage which could not easily be stopped by ligatures; for besides the fascial artery and some small branches which were easily secured, some large blood-vessels lying immediately on the surface of the tumour, which seemed to be entirely venous, were divided and bled so profusely that in a short time syncope was induced. It now became necessary to remove him from his seat, and place him in a horizontal posture, which occasioned a little delay; but the hæmorrhage ceased and the operation was continued by exposing the bone near to the tooth next to the last grinder on the left side, and dividing it as expeditiously as possible, with a metacarpal saw fixed for the purpose in the handle of a file. The soft parts were now divided, and the tumour removed by passing the scalpel through the diseased bone, on the right side where it was very much enlarged, hollow and as soft as cartilage, leaving a portion of diseased bone at the angle of the jaw, which it was indispensable to remove to ensure the success of the operation. This was done with as little delay as possible, but was more tedious than the division on the opposite side, on account of its position and the bone being broader and less firmly fixed. There was no hæmorrhage after the fainting to retard the operation, nor did any occur after the circulation of the blood was fully restored.

The blood being washed clean from the wound, and no further hæmorrhage supervening after the patient had sufficiently revived, the flaps were brought together and united by the interrupted suture with strips of adhesive plaster between the stitches. A compress of soft rags and bandage formed by a roller passing under the *chin*, and over the head, and then round the head to secure it in its place, completed the dressings. He was very much exhausted by the operation, and when put to bed his pulse was extremely languid. He however breathed easily and made no complaint.

15*th.* Rested well through the night, does not complain of much pain; pulse still languid, moves his tongue with facility, and articulates distinctly enough to be understood. *Evening.* Swallows with ease, and has taken in the course of the day a pint of arrow-root, made by pouring a pint of boiling water on a table-spoonful of the arrow-root, first mixed with a little cold water. It was sweetened and given to him through a small funnel.

16*th.* Rested well last night, but complains more of pain this morning; has some head-ache, pulse fuller and more frequent, but no fever; has had no evacuation from the bowels since the operation; ordered a purgative enema. *Evening.* Enema produced two copious stools which relieved his head; has taken to-day a quart of arrow-root prepared with equal parts of milk and water, and sweetened with brown sugar.

17*th.* Rested tolerably well; complains of head-ache, and feels very uncomfortable; suppuration copious, removed the bandages, washed the wound and dressed it, as at first, after which he took his arrow-root, and felt more comfortable. *Evening.* Has had a natural evacuation, pulse eighty-two, soft and regular.

18*th.* Rested well last night, pulse eighty-six, and soft; takes nourishment well, bowels easy; wound suppurates freely, and a considerable space on the right side not united by the first intention; regret that I had not made use of the twisted instead of the common interrupted suture, as this last has not prevented the skin from folding inwards and separating the cut edges.

19*th.* Doing well, cavity of wound filling up with healthy granulations, appetite good, evacuations regular, rests well.

21*st.* Removed the common sutures from that portion of the integuments on the right side, which did not unite by the first intention, and made two quilled sutures.

25*th.* Continues free from fever, rests well, has good appetite, takes nourishment freely, articulates better, and improves daily in his appearance. The quilled sutures have answered completely the inten-

tion of keeping the edges of the integuments in apposition. The tongue which has been furred since the operation, is now quite clean.

From this time every thing went on well, the healing process though slow was not interrupted by any untoward circumstance. He grew tired of liquid food, and about the middle of February began to eat rice and milk, homminy and milk, and sometimes molasses instead of milk. On the first of March, he was able to go about and assisted of his own accord some carpenters who were at work near his house in handing their tools, holding the timbers which they were hewing and the like. There was still a small opening through the cheek through which particles of food passed whenever he eat. I neglected him somewhat, and it remained so for some time. It became necessary to touch it with caustic, and to apply a strip of adhesive plaster, which had the desired effect, and in a short time it was entirely healed, except a hole about the size of a small quill which was again neglected, and remained so until about the first of May, saliva and small articles of food passing through it, when the caustic was again applied, both externally and inside of the cheek with the same good effect. It now healed up entirely, and has remained well to the present time, just two years having elapsed. Tom expressed such a strong desire to live with me, that I purchased him, and he has been a constant labourer on my plantation ever since. I hear of no difficulty about his eating, and he has not during that time to my knowledge been stopped from his work by any sickness, except a slight attack of bilious fever last autumn, and a small hurt which he received by a fall from a wagon. The disease appears to be entirely eradicated, and the flesh is as firm and sound there as in any part of his body. The flaps were very large, and in healing formed a fold in front of the scar left by the wound in such a manner as to supply in some measure the place of a chin, and he is by no means as much disfigured as one might suppose a person would be who had lost almost the whole of his lower jaw bone. The deformity is not so great as to attract particular notice, or to render his appearance disagreeable.

Stateburg, South Carolina, May 4th, 1832.

ART. III. *Observations on the Cholera of Paris.* By C. W. PENNOCK, M. D. and W. W. GERHARD, M. D. of Philadelphia.

THE epidemic which has existed for the last month at Paris, and has not ceased at the moment at which we write, found us pursuing our ordinary medical studies; these were interrupted, the clinical lectures were suspended and all access to the hospitals was for the moment forbidden. The restrictions were, however, soon removed from the medical visits, the attendance became regular and more frequent than in ordinary seasons, but the attention of the physicians was exclusively directed to the study of this novel and dreadful affection. The attention of the ablest pathologists of Europe being thus concentrated upon the study of the epidemic, it was hoped that its anatomical lesions would be observed with care, the succession of its symptoms ascertained, and perhaps that from these data some laws might be deduced of high importance in the treatment of the disease. The cholera had been the subject of special medical commissions in all the European governments, which missions were not without their use, although their object was imperfectly attained, and it is to be regreted that their example was not followed by the authorities of the United States. The American physicians who remained at Paris during the epidemic did not aspire to the honour of representing their profession—belonging to the youngest classes of it, they could pretend to nothing more than their own instruction, and would only be useful as the interpreters of the Parisian pathologists. With these views the authors have ventured to publish a condensed account of the epidemic at Paris, based upon such cases as they had observed in the practice of the most accurate physicians. They believe that the important facts may be contained within the dimensions of an essay, and that this form will be more extensively useful than if they had added another to the multitude of volumes already devoted to the Asiatic Cholera; besides, as we may hope for detailed opinions from the physicians in whose service these facts were collected, all prior publications should be regarded as imperfect introductions to more important documents.

Several hospitals, as the Hôtel-Dieu and the Val-de-Grace, were occasionally visited, but the complete observations were collected at La Pitié, in the wards and amphitheatres of MM. ANDRAL and LOUIS. The reputation of M. Andral as an eloquent professor and learned pathologist is scarcely less known in America than at Paris, but his accurate discrimination and skilful practice can only be fully

appreciated by those who have had the happiness of listening to his personal instructions. The wards of M. Louis have furnished us with the greatest number of facts. The cases were examined with a minute attention and the autopsies made with a care unknown not only in other cities, but at Paris not witnessed except in the wards of the *few* accurate observers. The inquiries of this eminent pathologist in cholera as in other diseases were not directed with the intention of supporting a favourite system, but from the desire to arrive at correct medical data, and to diffuse a taste for accurate observation amongst the numerous pupils who have been educated under his auspices. The Americans who have lately pursued the study of medicine at Paris, are equally indebted to him for his important lessons, and the kind attentions which they have received as individuals; obligations which the authors of this essay are especially happy to acknowledge. The plan pursued will be extremely simple, a number of detailed cases terminating by death, will be presented with their anatomical lesions; and analyses will be given both of these cases and such others as were necessarily excluded by the limits prescribed. A picture of the severe characteristic disease is thus more accurately presented than by general descriptions, and the relative importance of the symptoms may be readily understood. Other observations will furnish examples of the lighter forms in which medical science proved sufficient to overcome the malady; unfortunately the violent symptoms which the disease frequently assumed were rarely subdued by any system of treatment. The summary devoted to the general history of the disease need not be long, the only points of interest being such as were peculiar to the epidemic in this city; these will be noticed as fully as the facts yet communicated to the public will warrant. The important question of the treatment is yet undecided, and should only be discussed with caution. What opinions the majority of the Parisian physicians have adopted cannot be ascertained, and in the present limited knowledge, suggestions should rather be thrown out than positive opinions advanced.

The epidemic commenced on the 26th of March, in the quarter of the "cité," a damp island in the Seine inhabited by the most wretched classes of the population, and in a few days it extended on each side of the river, through the dirty and narrow streets in that part of Paris. It speedily prevailed with great violence on both sides of the river, but on the northern side it was chiefly fatal in the 8th and 9th arrondissements, including the faubourg St. Antoine; on the southern side all the three arrondissements into which this part of Paris is divided, suffered severely, especially the 10th, in the vicinity of the Ecole

Militaire, and the Invalides, and the 12th, which was a much poorer and worse ventilated district. The populous portion of Paris comprising the 1st, 2d, 3d, 4th, and 5th, arrondissements nearly escaped, so that the apparent mortality was really in a much greater ratio for the five or six districts, which the disease attacked with most violence, than it seems to have been for the whole city.

It was at first imagined that cholera was a disease of the poorer classes, an error which probably arose from its appearance in the damp, unhealthy districts which are tenanted by the most necessitous part of the population; the fancied exemption of the wealthy soon ceased when the victims became numerous in the aristocratic suburb of St. Germaine; the residence of most of the ambassadors and nobility. The portions of the city which suffered least, perhaps owed their exemption to a more elevated and better ventilated position; but general conclusions of this kind would be opposed by so many exceptions that we do not venture to make them with confidence in their correctness. The aged or those past the prime of life, were much more subject to cholera than the young, and less capable of resisting its violence; we had prepared some tables of the ages most affected by cholera, but we abstain from all statistics, as the documents are at present necessarily incomplete. MM. Villerme and Parent du Chatêlet are at this moment collecting the materials of an accurate work upon the statistics of cholera, which we shall probably communicate in a subsequent number of this journal.

It is proper to remark, that this essay must be necessarily incomplete from the difficulty of compressing abundant materials into a small compass, and the peculiar circumstances under which the authors were placed. Believing that the basis of it is valuable, because it is the results of the experience of the first pathologists of the age, the authors only regret their inability to act as more faithful interpreters.

Case I. Salle St. Paul, No. 22. Service of M. Louis. Lussat Joseph, ætat. sixty, groom, Rue de Seine, No. 5, 12th Arrond. entered April 24th, 7½ A. M. Well nourished during the winter, and slept in a dry room in his stable; he commits no excesses, and generally has an excellent appetite and digestion, but in his ordinary health he states that he has two or three liquid stools each day? Last night he slept well, rose as usual at 3 A. M. to feed his horses, and was in perfect health then, as during the whole of yesterday, when he ate and worked as usual. At 5 A. M. thirteen hours since, he was seized with a violent diarrhœa, at least ten discharges before his entrance; the diarrhœa was not attended or preceded by colics or

other pain in the abdomen, nor by chill and perspiration. Cramps occurred soon after the attack, beginning in the legs, and since continuing without interruption, but not severe enough to force cries from the patient. He vomited for the first time while in the litter on his way to the hospital, and also since his entrance, the matter vomited was without bitterness or other taste. Has passed no urine. Voice became feeble from the beginning. No dyspnœa.

Actual condition.—April 24th, 8½ A. M. Face livid, moderately violet, cool, especially the nose, eyes hollow. Temperature of arm and forehead nearly natural, lower part of legs cool, the upper part of the chest is also more or less livid, and cooler than natural, but the rest of the body is of the usual temperature. The veins of the upper extremities were also distended, even those of the hands were a little elevated. Sight and hearing perfect, intelligence unimpaired. Skin of ordinary sensibility, the folds made in the neck by pinching it up, very slowly effaced. Respiration 34, a little high. Pulse 88, very small and feeble, but regular. No cephalalgia, no pain or malaise when the cramps cease, nor any difficulty in the respiration. Somnolence, but checked by the cramps. Cramps are very violent, and exist both in the upper and lower extremities, especially the latter; the pain produces contortions of the face. Tongue cool, very livid. Thirst moderate. Abdomen indolent in its whole extent, even on pressure; the usual resonance on percussion above the umbilicus, but dullness of sound at and below it. The matter vomited since his arrival is formed by a watery liquid, (like dish water,) and containing flocculi of mucus, which do not resemble boiled rice. In general the patient seems feeble, but not to an extreme degree.

Ordered lemonade. Injection of linseed with ʒij. laud. Sydenham, to be divided in four parts, and one given every two hours. Frictions every half hour.

11½ A. M. The blue colour is now very marked at the chin, pulse scarcely sensible. Somnolence interrupted frequently by the painful cramps of the lower extremities. Two injections were administered, no vomiting nor dejection has occurred. Oppression at the epigastrium; indifference to the kind of drinks offered to him. Sinapisms to thighs. Frictions frequently.

4 P. M. Deep leaden blue colour on the whole body, incomplete loss of senses and intelligence, the patient appears to understand questions, but cannot reply, or return signs. Forearms cool, and covered with sweat. Radial pulse still perceptible, but very feeble, and frequent; the carotids pulsate feebly. Cheeks and nose cool, rest of face of natural temperature. Eyes more hollow than this morning, axis of

both directed outwards, pupils a little less than a line in diameter, the eyes are encircled, (cernés,) and bright, but without expression, and motionless. Respiration 32, high and noisy. Abdomen slightly tympanitic.

The injections and frictions were administered as directed. Death at 5 P. M.

Autopsy, April 25th, 9½ *A. M.*—Skeleton rather large and well-formed. Body rather thin. Face blue nearly, as in the last moments of life; livid blue unequally marked in the lower extremities. Body cold, except in the abdomen. Great cadaveric rigidity. Muscles large, of good colour, and not fishy, (poisseux.) Head.—Cranium was nearly twice the ordinary thickness. No blood external to dura mater. Very considerable infiltration under the arachnoid of a thin and livid red liquid. *Brain* small and very moist. The cortical substance grayish, and of deeper colour than ordinary. Medullary matter moderately injected. The whole mass of good consistence, but flabby. Each of the lateral ventricles contained about six drachms of serosity, less red than that of the arachnoid. Corpora striata were of the natural tint, but a little deeper than usual. The annular protuberance was remarkable only for its flaccidity, which was even greater than that of the cerebrum. The cortical substance of the cerebellum was livid *red*, and at its base there was about an ounce and a half of serosity. The spinal marrow was perfectly natural, both in colour and consistence, the nerves passing from it were equally free from appreciable lesion. The semilunar ganglion was grayish and reddish, and very firm so that it was impossible to divide it with the fingers, a line in thickness. Superior cervical ganglion was small, an inch long, and a line and a half broad, and of pale gray colour, it was separated by an interval of two lines from the middle ganglion which is also normal. The cervical plexus was perfectly natural, the par vagum offered at its exterior only some longitudinal red lines between its filaments. Thorax.—*Pericardium* healthy and without liquid, a little viscous on the exterior face of the left ventricle. The *heart* was of moderate size and contained much liquid blood, but *not* the least coagulum. The walls of the left ventricles were six to eight lines in thickness, and more so in the parts corresponding to the columnæ carneæ; its cavity, like that of the right, was a little larger than in the natural state. The *epiglottis* was moderately injected on both its faces, it was less pliable than usual; some injection was observed within the *trachea*, but only to a marked degree upon the projecting cartilages. Membrane healthy in other respects. The *left lung* was universally adherent, its upper lobe was light, and of a

bright red colour internally, excepting some blackish spots where the tissue is not evidently more dense than in other parts. The inferior lobe was heavier, and blackish near the fossa dividing it from the upper lobe, but without granular structure, a quantity of blood mixed with small bubbles of air flowed from it on pressure. The *right lung* was not adherent, its upper and middle lobes were less red than the left, with some dark spots on its posterior part. The inferior lobe was heavier than that of the left; posteriorly for the thickness of ten to fifteen lines, its colour was deep red, without granulation; this colour was circumscribed and contrasted strongly with the surrounding red. The black portion is firm, the fingers penetrate it the more readily in proportion to its firmness, but a moderate and continuous pressure forces out the blood from it with ease, and leaves the pulmonary tissue of the ordinary cohesion. Abdomen.—The *œsophagus* offered many crypts, especially in its upper third, the mucous membrane was every where covered by its epithelium. The *stomach* was rather large, containing at least a quart of troubled, reddish-gray liquid, thin, and intermixed with mucous flocculi of the same colour. The mucous membrane in general was gray, with a slight shade of livid pink; some spots of vermilion-red were observed near the cardia, and were formed by a multitude of little red points, more or less confluent. The membrane was of a smooth, velvet-like appearance in the breadth of four or five inches along the small curvature; in other parts it was mammillated, especially along the large curvature, and great tuberosity. No depression of surface, or longitudinal bands were observed in any part. Thickness, normal throughout; the *strips* yielded upon traction were from two to four lines in the great tuberosity, six to eight along the large curvature, and twelve or more in the small curvature and adjoining parts, the membrane was slightly injected in its thickness, but less than the subjacent tissue. *Small intestine* slightly tympanitic, white externally, with a slight shade of pink resulting from numerous and rather large muscular ramifications. It is distended by a large quantity of whitish-gray, troubled liquid, a little thick at first, but gradually diminishing in consistence as we approach the cœcum, where it is still abundant. A large quantity of irregular filaments, more or less long, and either solitary or united, float in it, looking like the moss of stagnant pools; no green liquid in any part. Some whitish or yellow mucus adhered to the intestine, much more abundant in the first than the second half, but every where easily detached. The general appearance of the mucous membrane was like that of the exterior, its thickness was normal throughout; in the jejunum it yielded strips from two to five lines,

afterwards from five to ten, longer in proportion as we approach the cœcum. It is *white* throughout, except little interruptions from vascular ramifications, which require close attention to be distinctly perceived.

The glands of Brunner existed in the last half of the ileum, at first they were scattered, and not larger than a mustard seed, afterwards to the three last feet more numerous, and of the size of a millet seed. The elliptic glands of Peyer were scattered in the whole length of the ileum, they projected very little above the neighbouring parts, from which they were distinguished by the absence of the valvulæ, and by grayish points which were observed in a certain number. The sub-mucous cellular tissue was moderately injected, the colour being much brighter after raising the internal coat. The mesenteric glands were small, healthy, of a fawn colour, (colour of weak café au lait.)

The *large* intestine was a little larger than natural, and contained a whitish-gray matter, very thin in the first half, but gradually thicker in the second, in the two last feet being nearly of the aspect and consistence of pus. The mucous membrane was pale throughout, except a slight shade of lilac in some points. Thickness normal throughout, the strips raised from it were from two to four lines in the cœcum, about the same length in the ascending and transverse colon, and three or four lines afterwards. Some crypts of half a line in diameter were seen in the two last feet of the intestine.

The *liver* of normal size, less red than usual, its tissue finely granulated, and easily penetrated by the finger, moderately gorged with blood. *Gall-bladder* distended by greenish and very fluid liquid. The *spleen* was deep red, and rather large, containing five or six cysts a line or two in diameter, which inclosed a calcareous matter. *Kidneys* healthy; nothing remarkable in the calicis and infundibula. The *bladder* of the size of an ordinary pear, contained about an ounce of troubled, gray liquid, slightly tinged with pink; its membrane was healthy. W. W. G.

Case II. Salle St. Charles. Service of M. Louis. Julie Française, shopkeeper, æt. 34, admitted April 12th, midnight. Her history, as given by herself, is, that during the 11th and 12th she had had diarrhœa, attended by borborygmy, but which was so slight during those days that she was not obliged to discontinue her occupation. She had no other symptoms except lassitude, sense of weakness, and loss of appetite, until the evening of the 12th, (7 P. M.) when there was sudden augmentation of the diarrhœa; the dejections became ex-

ceedingly frequent, and were accompanied with colic, nausea, vomiting, and cramps. The colic lasted but a short time, and soon disappeared; she vomited three or four times a liquid like water, which had no particular taste; the cramps commenced in the legs. She had not had any cephalalgia or tinitus aurium; has experienced great oppression in respiration since 12 o'clock last night, since which the voice has been very feeble; general prostration for the last eight hours.

13*th*, 8½ A. M. Present situation. Has just been bled ℥vj. which has slightly relieved the sensation of oppression; and the expression of the countenance is better. Face and lips cold, of a violet colour; body generally livid, marbled with violet or purple spots, and cold; the patient, however, complains of the burning sensation of the heat of the surface, and throws her arms out of bed to relieve this feeling. The folds of the skin, (caused by pinching it up,) efface themselves slowly. No cephalalgia; sight and hearing good; intelligence unimpaired; almost entire aphonia; tongue cool, slightly violet at the borders; thirst intense, desires very cool lemonade; has no nausea after drinking. Abdomen is sunken, without pain even upon pressure at the epigastrium or other parts; no sensation of internal heat. Stools liquid; urinates freely; cramps frequent and severe in the legs, none in the thighs or arms; pulse 120, very small, regular; respiration twenty-four, costal. ℞. Frictions every half hour to reëstablish heat; injection of decoction of flaxseed with ℥ss. of laudanum every two hours, and—antispasmodic potion, ℥iv.; alcohol, ℥v.; syrup orange peel, ℥j.—℥ss. every half hour.

5 P. M. Feels better; respiration less frequent, not costal; face cold as ice; upper limbs covered with a cold sweat; eyelids half-closed; eyes immoveable; features fixed and unchanging. Upon looking at her we would suppose that the functions of life had ceased. Pulse 100, very small, extremely weak. Continue the treatment. Died 14th, at 5 A. M.

Autopsy twelve hours after death.—Frame large, well-formed, some slight violet appearances at the internal part of the thighs. This morning, (April 14th,) at 10 o'clock it was observed that the heat of the surface of the body was much greater than it was yesterday at 5 P. M.; no emaciation; embonpoint considerable; muscles of a fine colour and good consistence.

Cranium.—Numerous drops on the external face of the dura mater; cerebral veins distended by a large quantity of blood; pia mater moderately and universally injected; sub-arachnoid infiltration; cerebrum moist, of good consistence; cortical substance of corpora

striata darker than natural; medullary substance slightly injected; right lateral ventricle contains ℥ij. of transparent serosity; left, half that quantity; cerebellum in the same state as the cerebrum; tuber annulare a little grayish and violet, firm, like the medulla oblongata.

Par vagum natural; superior cervical ganglion a little grayish, natural in volume and consistence. The semilunar ganglion accidently removed with the pancreas, was not examined.

Thorax.—Pericardium healthy, moist, containing ℥ss. of citron-coloured and limpid serosity. *Heart* of good size, contains a moderate quantity of blood, with some fibrine; coagula of considerable firmness in right ventricle; walls of the ventricles firm; the left thickened. *Lungs.* Left pleura perfectly healthy; slight cellular adhesion to the lung; left lung heavier than natural; its inferior lobe red and engorged with blood; the upper contains some blood; in each lobe air is mixed with the blood. Right lung, adherent to the pleura throughout its extent, offering at its summit large vesicles, from one to two and a half lines in diameter, sometimes even greater—flabby, a little heavier than natural, reddish and grayish in superior lobes, red in the lower, containing less air, and same quantity of blood as the left lung.

Abdomen.—Stomach of moderate size, containing a fluid resembling the white of eggs, in which float mucous flocculi incompletely transparent. The mucous membrane is of a light violet-red in the half of the anterior face next the cardiac orifice; whitish or little green in the other parts. On the anterior and posterior faces, near the large curvature, are observed, say fifty points of half a line in their greatest diameter, where the membrane appears at first sight to have been destroyed; this, however, is not in the entire thickness; for upon detaching the membrane from the subjacent cellular tissue, the holes are not visible on the external face; these half-perforating orifices are equally demonstrated when a scalpel is passed through their centres. In the large tuberosity, in the posterior and anterior face of the great and small curvature, the membrane is observed of natural thickness and of good consistence. Œsophagus is covered with its epidermis, and offers some crypts.

Small intestine externally of a light rose colour in their whole extent; slightly injected, tympanitic; contains in the first half of its length a whitish liquid like thin porridge, in which floats a light mucus; in the second portion of the intestine the liquid is much thinner and more abundant; almost as thin as water, in which is suspended a multitude of grayish lilac flocculi, as if coloured by claret and water, and in the midst of which are numerous air-bubbles; the appearance

very like that of trifle, *(œuf a la neige.)* The internal colour of the intestine when cleaned of mucus is the same as that externally. The odour emitted upon opening the intestine is very peculiar, disagreeable, and extremely pungent. The mucous membrane is of a dull white throughout, excepting the last two feet, where it is of a slight rose colour; its thickness is natural in the jejunum; it is slightly thickened in the ileum. Strips of five to six in length are obtained in the jejunum; six or nine in the ileum. In the last half of the intestine the elliptic glands of Peyer are of a pale white, milky colour, *apparently* not thicker than the neighbouring parts; careful examination by touching them, proves them to be more projecting in the last five feet; in this space are observed a small number of the glands of Brunner, which are at first of the size of the *semola*, afterwards three or four times larger. The mucous membrane in its extent has merely some vascular ramifications, whilst the subjacent cellular tissue is the seat of an injection visible internally and externally. Mesenteric glands slightly enlarged in size, especially those accompanying the ileum; their colour is ordinarily reddish, consistence good; in other instances they present the colour of coffee with milk.

Large intestine slightly enlarged in its first half, containing a whitish and slightly grayish matter, which is thicker and more abundant in the first than in the second half. The mucous membrane is generally pale; some red, projecting spots, caused by the engorgement of some crypts, which adhere to the subjacent cellular tissue, are seen in the transverse colon, and near the sigmoid flexure; the redness of the membrane is very deep; its consistence and thickness normal throughout.

Liver dry on exterior, and covered with a viscid substance; size normal, paler than natural, in other respects healthy. The gall-bladder contains a small quantity of a greenish-black, viscid bile.

Pancreas pink-white externally, nearly of the same colour as that of small intestines; size and consistence normal.

Spleen enlarged—otherwise sound.

Kidneys of natural size, perfectly healthy, calices and infundibulæ present nothing remarkable. *Bladder*—size of a large apple; livid at the fundus; parietes not thickened; mucous membrane covered with a light grayish, creamy substance, easily removed by the scalpel.

Uterus increased in size—one-third above the normal standard; walls of the body ten or twelve lines thick; its cavity contains a small quantity of a red liquid of the consistence of mucus, under which the walls are less red, except towards the angle of the fallopian tubes. Ovaries present nothing remarkable. W. W. G.

Case III. Hôpital de la Pitié, Salle St. Athanase, No. 13. Service of M. Louis.—Jean Gonang, æt. twenty, sawyer of planks, living in the tenth arrondissement, entered the hospital at 8 A. M. During the winter has experienced much privation and his alimentation has been very insufficient. For eight days preceding the attack he had cephalalgia, but which is at present much diminished.

10 A. M. Present situation. Has been sick nine hours; yesterday worked as usual to 6 P. M. and with exception of head-ache was in good health. Slept well until 1 o'clock this morning, when he was awakened by violent colic; had no evacuation; an hour afterwards cramps and nausea supervened; had neither chill nor fever at the onset; sight impaired since 2 A. M.; has had four watery dejections without vomiting; he has neither nausea nor head-ache; has not urinated since last night; voice is much changed; cramps almost constant in the superior and inferior extremities, beginning in the toes and fingers; face violet, eyes excavated, encircled by a dark line; the whole face, particularly central parts, cold; legs and arms cold; thighs and abdomen of natural temperature; anterior part of the chest of livid whiteness; folds of the skin efface themselves quickly; tongue cool, natural on the edge, a little yellow in the centre; thirst intense, deglutition rapid, desires warm drinks; no disposition to urinate; constant anxiety; arms thrown out of bed; drowsiness or sluggishness of mind, though the patient is immediately aroused by the least question; respiration thirty-four, costal; pulse almost imperceptible; heart beats with force, 108; skin is insensible to pinching with the nails; treatment warm lemonade; venesection, ℥x.; if blood should not flow, twenty leeches to the epigastrium, and six to each side of the neck; dry frictions every half hour; if no amelioration after bleeding, give potions No. 1, 2 or 3, according to circumstances; a vein was opened immediately, but it was found impossible to procure blood; leeches were then applied, which drew well, but no amelioration followed, and death ensued at 3¾ P. M., thirteen hours after the onset of the malady.

The only feature of peculiar interest in this case was the absence of vomiting, a symptom which forms so constant a characteristic of the disease.

Autopsy twenty hours after death.—Frame well-formed, stature elevated, cadaveric rigidity very considerable, overcome with difficulty, lividity of the face, and violet spots on the limbs, muscles of natural colour, firm, not fishy.

Cranium.—Sub-arachnoid infiltration considerable; substance of the brain much injected, of good consistence; large quantity of serum

in left ventricle, corpora striata of darker colour than natural, medullary matter of cerebellum of violet red, costical part of a deeper colour than natural.

Par vagum healthy; superior cervical ganglion grayish as in the natural state; semilunar ganglion gray, a little livid, very friable.

Thorax.—*Heart* firm, of good size, containing a quantity of liquid blood; in the right ventricle was found a yellow, fibrinous clot. *Lungs* slightly viscid at their exterior, no serosity in the pleura, left lung light, inferior lobe gorged with blood, upper lobe of a bright red, colorization of right lung similar.

Abdomen.—Stomach augmented one-half in size, containing much liquid matter of the colour and consistence of whey, in which floated some oily drops. Mucus very adherent to the membrane, except at the great cul-de-sac, where the mucous tissue is of a pink colour like the peeling of the onion, and striped; the mucous membrane is soft in the superior fourth of the stomach, better consistence in other parts; in these portions the adherent mucus can be detached, but with difficulty, by the back of the scalpel. Mammillation of the membrane occurs in the half nearest the pylorus.

Small intestine, in general of a livid rose colour, owing to the subperitoneal injection; it is slightly distended in its superior third, containing a thick whitish matter, with flocculi resembling broken rice in the first half, and of a grayish tint; in the second half this fluid is reddish and more abundant; general internal lining of the intestine was a light pink tinge, slightly livid; valvulæ conniventes thicker than natural; plates of Peyer, of a dull white, very visible but not projecting beyond their usual level; after the evacuation of the fluid contents and washing of the mucous membrane, much mucus still remained adherent to the membrane; mucous membrane thickened in the first third, where strips are four to eight lines; they are longer near the cœcum; numerous cryptæ, (follicles of Brunner,) in the last half of the small intestine, which augment as we approach the cœcum, being in the last three feet very close to each other and larger than a millet seed.

Mesenteric glands large, size of a kidney bean, of a fawn colour.

Large intestine.—Colon tympanitic in its whole extent, increased to twice its natural size; containing a tolerably thick liquid of a milk-white or grayish colour, in considerable abundance, in the midst of which are flocculi; the odour of this liquid is peculiar, but not fæcal; general internal colour of mucous membrane, white, shaded with pink; cryptæ numerous; in the first foot, confluent, distant from

each other one to two lines; they afterwards become more rare and are again abundant until within two feet of the anus, when they entirely disappear; mucous membrane is every where thickened; yields strips eight to ten lines in length every where. *Bladder* size of a large pear; contains a little liquid, of colour of urine; membrane is pale and healthy. *Liver* of good size, containing a moderate quantity of blood; more easily penetrated by the finger than usual; its colon tolerably deep; gall-bladder contained a considerable quantity of dark green bile moderately fluid. *Kidneys* healthy. *Spleen* enlarged but healthy. W. W. G.

Case IV. Hôpital de la Pitié, Salle St. Athanase, No. 11. Service of M. Louis.—A rag-gatherer, aged thirty, was brought into this ward on the morning of April 4th. He had been taken sick at midnight of the third; the day preceding, had worked as usual. The attack commenced by vomiting, numerous stools, intense and universal cramps, which have continued; he had no pain in the abdomen before the appearance of the cramps. April 4th, 8½ P. M. Present situation. Has universal cramps, the intense pain of which forces cries from the patient; expression of countenance that of intense suffering; at intervals gnashing of teeth; face livid and violet; eyes sunken in the orbits, at times watery; profound drowsiness, and does not reply to questions addressed to him; tongue is very cool and moist; has no nausea; thirst intense; deglutition rapid; voice extremely feeble; the surface of the skin of the breast and extremities extremely cold, and impossible to warm it by frictions; experiences relief from dry frictions by flannel; inferior members of a livid paleness; sight and hearing good; pulse imperceptible; respiration twenty-eight, without effort; no pain at the epigastrium, except at the moment of the cramps; experiences an agreeable sensation at the epigastrium after taking the following potion in doses of ℥ss. ℞. Antispasmodic mixture, ℥iv.; alcohol, ℥j.; laudanum of Sydenham, ʒj.

Prescription. The above potion every half hour, or oftener, if the heat is not reëstablished—one-quarter enema of linseed with laudanum, ʒj., every two hours.

4 P. M. No cramps for an hour; plaits of the skin of the neck efface themselves with difficulty; entire face cold, of a pale lividness, complains of sensation of heat, especially of his forearms, which are however livid and cold; thighs cold; the body of a natural temperature, except the parts which are uncovered; breast livid; intelligence perfect, answers are prompt; natural brilliancy of the eye; no urine, no vomiting, no stools; beating of the heart feeble, 108; pulse insen-

sible on the left side, some think that they feel it on the right; respiration twenty-four, not difficult; agreeable sensation at epigastrium, still continues upon taking the alcoholic potion. (Lemonade, potion from hour to hour, dry frictions with flannel to limbs.)

9 P. M. Extreme feebleness, cramps in the extremities, dry frictions have been applied where the cramps have existed.

April 5th, 8½ A. M. Face of a livid paleness; central parts pale; eyes dull, covered with mucus; respiration slow, fourteen; pulse imperceptible; body of ordinary temperature; abdomen soft, insensible to pressure; the forearms, though covered, cold. Half an hour since abundant discharges by stool of the colour of lees of wine. Friction to lower extremities. ℞. Antispasmodic potion, ℥iv.; alcohol, ʒij.; syrup of orange peel, ℥j.—℥ss. every hour.

3 P. M. Respiration continues. Death at 4 P. M.

Autopsy, twenty hours after death.—Rigidity of the muscles considerable; anterior part of the right arm violet; lividity of the lower extremities.

Cranium.—Sub-arachnoid infiltration extremely slight; cortical substance of cerebrum of a pink colour, slightly livid; corpora striata pink but deeper; brain in general firm, moderately injected; about a spoonful and a half of serosity in each lateral ventricle; cerebellum in a situation analogous to that of the cerebrum. Par vagum of ordinary thickness, a slight shade of pink externally, white within; superior cervical ganglion of ordinary size and violet colour.

Thorax.—Pericardium contains half an ounce of serosity; heart of middle size, of good consistence, containing a large quantity of liquid blood without clots. *Lungs*, some cellular adherences to the right lung, very emphysematous at the base, not engorged; lateral adherences very slight; left lung has but slight adhesions.

Abdomen.—*Stomach*, a little distended, containing a tolerably abundant, greenish liquid, in which float mucous flocculi; mucous membrane of pale pink in a part of the anterior face; a pink of a deeper tint and a little livid in other parts; strips one to two lines in great cul-de-sac, in other places of natural thickness; no where mammillated.

Small intestines, externally of a redness slightly livid in all its extent, except the four or five first feet, where it is only of a light rose colour; the intestine contains a liquid which is tolerably abundant in its first half, of a colour at first slightly yellow, then of a red, more or less intense; the internal appearance of intestine is a light opake yellow in the four first feet, then of a livid red, interrupted by ecchymosis, or red spots of a deep colour; these are limited to the mucous

membrane of the jejunum and to the three or four last feet of the ileum, where they are more numerous and nearer one another; in the first four feet of jejunum the mucous membrane is of a light opake yellow, and its consistence for this distance is a little less than in the normal condition; in the rest of the intestine the membrane is more or less rose-coloured, (pink,) and slightly injected, and is perhaps a little thicker than in the healthy condition; in the last two-thirds of the ileum, the crypts of Brunner are very rare, small, of the size of a grain of millet; afterwards they become more numerous and larger, so that in the length of two feet they are from one-fourth of a line to a line in diameter; plates of Peyer healthy as well as the mesenteric glands.

Large intestine much augmented in volume, and contains a tolerably large quantity of liquid, of a red colour, like the dregs of wine, very fluid, and holding in suspension the same quantity of mucous flocculi as contained in the small intestine; mucous membrane of a livid red colour, more or less deep throughout its whole extent, thickened in the cœcum where it yields strips of four or five lines in length, in the ascending colon strips of ten or twelve lines; the thickness of the membrane is rather greater than natural, but it adheres less firmly to the subjacent cellular tissue; the membrane is extremely soft in the first two-thirds of the transverse colon where it is completely destroyed in some points, presenting the same appearance and the same consistence in the second third; of natural consistence and thickness afterwards. *Liver* of small size, tolerably consistent, healthy; bile sufficiently abundant, dark green, moderately thick. *Bladder*, conoid, containing the amount of volume of a hazlenut of grayish mucous liquid; coats extremely contracted, four lines in thickness; aorta containing a large quantity of liquid blood, no redness. C. W. P.

Case V. Salle St. Charles, No. 11. Service of M. Louis.—Hevet, (Charlotte,) a seamstress, twenty-nine years, married April 14th, 1831. For the last month she has suckled an infant. Was taken ill on 13th, at 4 P. M. when a diarrhœa which had commenced in the morning became very violent; an hour afterwards, at 5 P. M. vomiting of a bitter matter mixed with the food which she had taken at 12 o'clock. Cramps came on simultaneously with the vomiting, the cramps recurring very frequently, and the vomiting three or four times. Slight pain in abdomen.

She compares the pain rather to a feeling of suffocation than an acute suffering. Kept her bed since the onset. At 7 P. M. she had cold

sweats not accompanied with heat. Voice feeble since 8 P. M. Suppression of urine. No stools since her arrival here. Matter vomited always bitter. Tinnitus aurium. Entered at 2 A. M. 14th.

14th 8¾ A. M. Present condition. Face violet and cold, especially the nose, very moist. Arms cold, but she throws them out of bed in consequence of *sensation* of heat. No head-ache. Dizziness upon rising. Pain at epigastrium, hypogastrium and in the back, experiences shooting pains at the epigastrium. No borborygmi in abdomen even on pressure. Tongue violet and cool. Respiration impeded, thirty, and costal. No pulse at wrist. Desires cold applications to the skin, especially on abdomen. Suppression of urine, which greatly excites the attention of the patient. No cramps. Lemonade. Thirty leeches to epigastrium. ¼ injection of flaxseed, with ʒss. laudanum, q. b. h.; frictions on limbs, q. b. h.

6¼ P. M. No sensation of coldness, yet the upper extremities are cold in their whole extent—arms constantly out of bed. Face cold. Sight a little troubled. Voice sufficiently feeble. Complains of passing no urine. Pain at the hypogastrium. Thirst tolerably great. No vomiting. Respiration high and accelerated, pulse insensible. Thirty leeches to hypogastrium. Injection with laudanum.

Death at 2½ A. M. 15th.

Autopsy, seven hours after death, 15th.—Frame rather large, corpulent. The coldness is not complete, and less so than during life at the last visit. Some lividity at the upper and internal part of the thighs. The left mamma was slightly violet, rather large and very moist, yielding a flowing liquid of milk colour; right mamma not remarkable; muscles of good colour. *Cranium.* But little blood on the external surface of the *dura mater*, no *sub-arachnoid* infiltration, and scarcely any serosity in the ventricles. *Cortical* substance and *corpora striata* firm and natural. The *medullary* portion was very little injected, but marbled with livid spots. No appreciable lesion in the rest of the brain.

Thorax.—*Pericardium* healthy. *Heart* of moderate size, containing a tolerable quantity of black liquid blood in which are some unformed coagula. *Left lung* not adherent, no liquid in pleura, internally of bright red colour, becoming brownish-red in the lower lobe which was a little heavy, but in other respects natural. *Right lung*, similar to the left in weight and appearance, except the upper lobe which was much paler. Abdomen. *Stomach* of good size, livid gray externally and containing a tolerable quantity of grayish-yellow liquid, which was very fluid with flocculi of light mucus. Mucous membrane was grayish or whitish along the small curvature, whitish with a slight

pink tint in the other parts, some red points were seen in the great cul-de-sac. The membrane was a little injected in its substance and slightly mammillated in a small part of the large curvature, which was coated with a little viscous mucus; consistence and thickness normal throughout.

Small intestine, moderately distended in its whole length, but rather larger in its last than in its first half. Its colour externally was white with a shade of pink in the first four-fifths, afterwards more or less grayish-green. It contained in the first three feet a moderate quantity of greenish and rather viscous mucus, then an opake, whitish liquid like milk, more liquid and more turbid as it approaches the cœcum, so that in the last four or five feet it is almost as fluid as water. Internal aspect of the intestine was similar to the exterior. The mucous membrane was pale in its whole length, a slight pink tint observed in certain parts resulting from the injection of the sub-mucous tissue. The membrane yields strips of only two or three lines in the first four feet, afterwards eight to twelve, it was not at all thickened in the first half, slightly so in the three or four feet which followed, and afterwards normal. The glands of Peyer were whitish, with a slight shade of lilac, easily distinguished by the difference of colour, but of normal thickness. The glands of Brunner were not numerous, and observed only in the last five feet, where they were scattered and not so large as a millet seed.

Large intestine, voluminous in its first and last third, containing a moderate quantity of grayish, turbid, but very fluid liquid, with no signs of mucus; the liquid has a dirty shade in the second half, three or four fragments of yellowish friable matter were found in it, resembling grease. The mucous membrane whitish and grayish throughout, was slightly shaded with livid pink; some points in the first half were deep red, and the whole inferior third was slightly tinged of the same colour. Consistence and thickness natural throughout. The cellular tissue was generally more or less injected, but the membrane itself only in the red parts. Numerous cryptæ were visible in the whole length.

Liver of good size, was rather pale and flabby, but not wanting in cohesion; it contained a moderate quantity of blood. Bile abundant, moderately fluid and of dark-green colour. *Spleen* normal. *Kidneys* healthy. *Bladder* contained only a little creamy liquid. *Uterus* of usual dimensions, rather flabby, redder and more moist than natural, its cavity was brownish-red but contained no blood. The *par vagum* was marked with two or three narrow longitudinal lines in a part of its length, but it was perfectly white internally, and the natural size.

The middle and upper cervical ganglions of the sympathetic, very pale, of moderate size and very coherent. W. W. G.

Case VI. Salle St. Charles, No. 28.—Leger, ætatis 40, workwoman, living Rue du Pont aux Tripes, twelfth arrondissement, admitted 13th of April. This patient's general health was very good—seldom ill before this attack; during the winter was rather subject to privations, want of food, and lived in a cold and damp room. Her illness commenced yesterday evening at 8 o'clock. The first symptoms were diarrhœa with colic pains, followed two hours after by vomiting and cramps; the cramps commenced almost simultaneously in the lower and upper extremities. According to the patient's account, the vomitings were first composed of the food she took, afterwards of a liquid of a somewhat green colour and bitter taste, and the stools of a yellowish-brown colour. This state, accompanied with a general cold sensation, persisted with the same intensity up to the period of her admission, the 13th of April.

At our visit we found her in the following situation. The skin in general was of a deep violet colour, principally the lips and the hands; the eyes without their usual lustre, sunk in the orbit, the orbit was encircled by a well-marked blue rim; the countenance blue, expressive of anxiety; cheeks, nose, forehead and chin, cold and livid; breath almost cold; tongue cold, but moist, and of a yellowish hue in the centre, slight red on its borders. The extremities cold and livid, particularly the hands and feet; pulse at the wrist insensible; strong costal respiration; the tongue had also a violet tinge; the epigastric region painful on pressure; general debility, such as to render her almost incapable of replying to our questions, however her intellectual faculties were perfect, as well as her senses, such as her sight, taste, smell, &c. &c.; she complained of noise in her ears, and a little head-ache; frequent liquid, yellow stools, and vomiting of a whitish-coloured liquid, in part composed of the drink she took; cramps frequent, particularly in the lower extremities, and a sensation of oppression in the chest. Voice completely extinct; somnolence; and the general appearance of the countenance such as that one would imagine it that of a corpse, so like was its expression that we were obliged to shake the patient to be certain, she was living; the right conjunctiva was considerably injected. Prescription, two half enemata with ℥j. of alcohol, and twenty grains of camphor in each; the vehicle being for each ℥vi. of decoction of starch. A potion composed of—aquæ menth. piperitid. ℥iij.; æther sulphurici, ʒij.; syrup. cit. aurantii, ℥i. Misce. A table-spoon-

ful every twenty minutes; mustard sinapisms on the belly, and an ointment composed of axunge, ʒij., ammonia, ʒi., mixed together, and rubbed to the anterior part of the thorax; sinapisms to the legs and feet.

14*th April, at* 8 *o'clock, A. M.*—The face less blue, lips less violet than yesterday; tongue natural colour, continues cold; thirst, nausea without vomitings, pain around the umbilicus, involuntary stools, suppression of urine; pulse 100, very small at the wrist; the cramps persist, as well as the aphonia; respiration constantly costal, thirty-six in a minute. Prescription—lemonade, the same potion as yesterday; 2½ enemata with ℥i. alcohol and ʒi. camphor in each. The ammoniacal ointment on the chest as yesterday; sinapisms sprinkled with spirit of turpentine to the extremities.

15*th*, 8 *o'clock, A. M.*—The ammoniacal ointment has determined a slight rubefaction. The patient took but half of the potion, face and extremities cold, tongue cold, little thirst, nausea and some vomitings, no stools, nor urine, nor desire to make water, absence of the radial pulse, pulsations of the carotid 84, respiration accelerated, thirty-six costal respirations. Prescription—lemonade, ½ enema with ℥i. alcohol, ʒi. camphor in it, and ℥v. of decoction of starch as vehicle. All these symptoms having augmented during the day, the patient expired at 4 o'clock, P. M. the 15th of April, having retained her reason almost to the last moment.

Autopsy, 16*th of April, at* 9 *o'clock, A. M.*—The cadaverous stiffness was very little marked; the hands, knees, and feet presented a very remarkable violet appearance; the skin of the abdominal parietes was of a greenish hue; the inferior vena cava and the vena porta were full of a black blood of a pitchy consistence and colour; the stomach very much contracted, diminished in size nearly to the volume of the small intestine, and contained a blackish mucus, in which were to be seen small white bodies; the mucous membrane of the great tuberosity of the stomach was of a slight rosy colour; this colour was more marked in proportion as it extended along the great curvature of the organ, to the extent of four inches; in the great curvature the mucous membrane was of its natural consistence; the mucous membrane of the rest of the stomach presented a mammillary appearance; the mesenteric veins full of black blood; two ounces of a brownish viscous liquid in the cavity of the peritoneum; the small intestines distended by a great quantity of gas; duodenum contained a small quantity of thick mucus, of a brownish-yellow colour; the mucous membrane of the jejunum was covered with a yellowish

mucus, of a thick and adhesive consistence. In the beginning of the ileum a large quantity of a yellowish liquid, in which floated some slimy, semitransparent flocculi; a foot lower down in the intestine the matter was more liquid, of a chocolate colour, and contained a smaller quantity of the corpuscles spoken of above; this substance was extremely fœtid; the colour of the mucous membrane of the intestines, duodenum, and jejunum, was of a pale rose; red blotches, 1st, twelve lines in length and six in breadth; 2d, seventeen lines in length and six in breadth; 3d, twenty lines in length and five in breadth; at the commencement of the ileum they become of a deeper colour, and the cellular tissue under the mucous membrane was considerably injected; a foot further forward the mucous membrane was of the colour of lees of red wine; the colour further forward of the mucous membrane was rather grayish, uniformly so; about two feet from the extremity of the ileum the mucous membrane was of a deep greenish-red colour; some insulated follicles towards the extremity of the small intestines. All the *plates* that we found on the mucous membrane were of a greenish colour, of a granulated appearance, and hard to the touch, little swollen, and perforated by small alveoli; the large intestine distended with fœtid gas, and contained a homogeneous, *chocolate and milk-coloured* liquid; the mucous membrane of the cœcum was extremely fœtid, and presented some red blotches here and there, with the sub-mucous cellular tissue considerably injected, and the mucous membrane softer than natural. At the origin of the right lumbar colon, and in the extent of two inches, the mucous membrane was very red and softened; the left lumbar colon was of a pale colour; in all the extent of the transverse colon there existed numerous *very small* ulcerations, the largest of which was about six lines in diameter; these ulcerations were round, their borders red, and their basis, or rather their centre, of a pale grayish colour; the mucous membrane softened in all its extent; the sigmoid portion was pale and white; the superior part of the rectum of a livid red colour in the extent of six inches; its lower extremity presented a livid appearance; the liver was livid in all its extent; the middle of the right lobe was of a whitish colour; its substance was but little injected with blood of ordinary consistence; the gall-bladder distended with very black, thick bile; spleen four inches in length, two in breadth, of a red colour and ordinary consistence. Heart; its right cavity contained a fibrinous clot of blood, discoloured; coagulated black blood in the left ventricle; a fibrinous clot little discoloured in the left auricle. The brain and the uterus presented nothing re-

markable. The bladder was quite contracted, and contained no urine; its mucous membrane appeared natural. The kidneys also natural.

Case communicated by M. Eager, attached to the medical service of La Pitié.

Case VII. Salle St. Charles.—Genviére Blanchat, æt. 23, workwoman, living Rue Fosse St. Marcel, twelfth arrondissement, admitted to-day. She has suckled an infant for the last month. She was perfectly well yesterday, working as usual. The attack commenced suddenly this morning at 7 o'clock, by diarrhœa accompanied by vomiting; cramps followed two hours afterwards, and were confined exclusively to the lower extremities. From that time extreme weakness, and she has been obliged to be in bed since.

April 12th, 4 *P. M.*—Face, hands and forearms bluish; eyes very hollow; lips violet; entire face cold, except the forehead, which is of natural temperature; hands and forearms cold; feet cold; neck and upper part of chest almost of natural temperature, but of a bluish-white colour; rest of the body of ordinary heat; folds of the skin of the neck slowly effaced; sight troubled; hearing good; voice feeble since last two hours; intelligence perfect; complains of sense of oppression, and asks to be bled; tongue cool, whitish, and a little livid; thirst intense; patient has not the sensation of cold either in the hands or feet; pain she experiences is that of oppression, does not resemble colic; has urinated within the last two hours; pulse insensible. ℞. Lemonade for drink. Antispasmodic potion, ℥vj., with syrup diacord., ℥j., of which take ℥ss. each hour; one-fourth of enemata of infusion of flaxseed, with ℈j. of laudanum; venesection; forty leeches to the epigastrium; frictions with ammoniacal liniment.

Immediately after the bleeding she appeared much better; respiration was much relieved. Death however ensued at 2 A. M. of 13th, nineteen hours after the onset of the disease.

Autopsy, 13*th*, 10 *A. M. eight hours after death.*—Frame large and well-formed; face cold as before death, but heat of the body and thighs well preserved; cadaveric rigidity in the arms, none in the inferior extremities; lividity on the internal and upper part of the thighs.

Cranium.—No sub-arachnoid infiltration; pia mater moderately injected; cerebrum soft, of ordinary coherence, not injected; cortical substance evidently darker than in the natural state, being of a livid pink nearly uniform throughout; corpora striata much less dark; the colour nearly natural; several spots ("marbrures,") of livid pink colour in the thickness of the white substance; none of these marbrures spotted with blood; tuber annulare flabby, livid, of small volume; me-

dulla oblongata firm, of usual whiteness; cerebellum in consistence, colour, &c. like cerebrum.

Semilunar ganglion tolerably voluminous, gray externally, less so in the interior where are seen white spots; it is one and a half lines in thickness in all points; par vagum perfectly healthy and white; superior cervical ganglion grayish and thin; mammæ much developed; that of the left formed of a multitude of grains separated by dense cellular tissue, furnishes a whitish liquid; right mamma of an unequal pink colour, granular like the left, less in size, containing a much larger quantity of very fluid lactescent liquid.

Thorax.—Pericardium healthy, moist, containing from ℥ss. to ℥j. of transparent serosity; heart of normal size, contains a large quantity of liquid black blood, in which are some ill-defined coagula of little consistence. *Lungs.* The left free in its whole extent, light, of a bright red externally, more deeply coloured internally, especially the upper lobe; a portion of the lower lobe has less consistence than the other parts, but is not hepatized; the right lung is free in its whole extent; it is contracted on itself, and is of a pale pink colour; the inferior lobe is precisely like the superior of the left side. *Abdomen.* Great epiploon, slightly moist and viscous, covering the small intestine in its whole extent. *Stomach*, at least one-half larger than natural, much distended by gas, and containing a moderate quantity of dark green yellow mucus; internal face of stomach in its superior two-thirds of an unequal livid pink; in its pyloric third more or less yellowish and grayish, lightly dotted with red; in its posterior face, with the exception of the extremity of the great tuberosity, a similar appearance is presented, and immediately to the left of the small curvature, the yellow becomes tolerably intense; the membrane is mammillated in the third near the pylorus; more evidently along the large curvature than in any other part, and especially in a part of the posterior face near this curvature, about an inch square; the mammillation is caused by rounded elevations, a line or less in diameter, lilac at their circumference, but with a white or more rarely a livid red point at their centres; between the elevations just described, and separated from each other by spaces of one-fourth to a millimétre, are small rounded spots, or little longitudinal depressions, resembling the incision of a sharp instrument; this appearance is probably only an advanced state of the red pointed injection described near the pylorus; a large number of these spots are lilac at their circumference and whitish at their centre, but they are confluent in the space of two inches and without central points; these spots last described, on careful inspection, were seen to be still more

numerous on the anterior face of the stomach near the pylorus, and sometimes three or four were united, and projected beyond the ordinary level, the projection being most evident where the mammillation was most marked; a surface of about four inches on the anterior part of the stomach near the pylorus was also mammillated; the mucous membrane was a little injected in its thickness in its whole extent, the thickness greater near the cardia than in other points; duodenum similar to the jejunum; some crypts were there visible.

Small intestine very moist externally; slightly tympanitic in the first half of its extent nearest the stomach, containing besides a certain quantity of gas, a grayish, turbid liquid, sufficiently fluid, holding in suspension a great number of light yellowish flocculi, not homogeneous, but composed of filaments more or less flattened and more or less united external colour of intestine grayish, and violet red; internal aspect of same appearance; in the first three feet of the jejunum the crypts of Brunner are numerous, placed near each other, and of the size of a grain of millet; afterwards they are not observed until they reäppear at the beginning of the ileum, in the whole extent of which they are very numerous, much more so than in the jejunum, and their number greatly increases as we approach the cœcum; their ordinary size is that of a grain of millet; they are of a whitish colour without central point. These crypts are often confluent, distant from each other from one-fourth to half a line; where they are closest, the membrane is manifestly thicker than in the natural state and proportionably more so in the last part of the ileum than in the last portion of the jejunum. The mucous membrane is of good consistence in the whole extent of the ileum; in the first three feet of the jejunum, strips of only two to three lines in length are obtained; its consistence is normal in other points. Some mesenteric glands, corresponding with the commencement of the jejunum, are more or less violet in their whole thickness, their size that of a kidney bean; others answering to the last part of the ileum were similar in appearance; some glands of Peyer were observed, but they were but little apparent on account of their violet red colour; their size was proportioned to the volume of the intestine, but scarcely projected beyond the neighbouring parts; a lumbricus was found in the second half of the small intestine.

Large intestine, slightly enlarged in the first part, and contains a sufficiently large quantity of a flowing liquid, yellowish and turbid as if puriform; mucous membrane of a pale white throughout; thickness normal every where; strips of twelve to fifteen lines in the two extreme thirds, less in the intervening space; no crypts visible.

Liver dry; gall-bladder shrivelled, containing a little very dark and moderately fluid liquid. *Spleen* softer and more easily penetrated than natural. *Kidneys* healthy, a little violet. Urinary bladder very small, containing a little thin milky fluid, injected in the inferior fundus; the membrane natural in other parts. *Uterus* small, ovaries voluminous. C. W. P.

Case VIII.—Salle St. Paul, No. 33. Service of M. Andral. Baire, ætat. thirty-eight, a cook, living Rue Copeau, No. 22, was admitted to-day at 7½ A. M. Was perfectly well the morning of the 15th—in the afternoon was much alarmed and agitated upon seeing the porter of the house in which she lived, die suddenly of the prevailing malady; she was seized immediately with chills, trembling of the limbs, followed soon after with diarrhœa—the dejections were numerous through the succeeding day, (16th,) but did not prevent the patient from following her occupations. Early in the morning of the 17th, great augmentation of diarrhœa, violent vomiting and cramps.

8 A. M. Present situation.—Face cold, colour violet, limbs cold, covered with a clammy moisture; eyes sunken in the orbits, encircled by a dark blue line; immobility of the features; mouth half-open; voice completely extinct; tongue cold, moist, and white. No pain in the abdomen; dejections resemble rice water, in which are white flocculi. No radial pulse—that of carotids 130, extremely feeble. Respiration 28, costal; intellect perfect.

Treatment. Sinapism to the abdomen, frictions with ammoniacal ointment on the limbs, blister six inches square between the shoulders. Lemonade for drink.

6 P. M. Face of the same colour as this morning, cool; nose very cold; body slightly warm with clammy sweats; arms warmer than in the morning; eyes half-closed, the pupils turned upwards, showing only the lower portion of sclerotica. Respiration 33, its force increased; has not vomited; stools involuntary; intelligence unimpaired.

April 17th, 7 A. M.—Expression that of extreme anxiety; face cold; eyes surrounded by dark blue line, not injected; skin of limbs cool. Tongue dry, slightly red; continual thirst; has not vomited since yesterday. Pain in the abdomen; radial pulse almost imperceptible; hands violet. Carotids have 120 pulsations per minute. Respiration 32. Little urine.

R. Continue the external application of yesterday.

4 P. M. Face is better; coldness diminished, though the nose is

still like ice. Skin dry; has had no vomiting; two dejections. No urine; complains of colic; tongue is red at point, and is thickly covered elsewhere with a white coating; colour of hands is a deep violet. No radial pulse. Respiration 33, slightly costal. Intelligence good.

April 19th.—She was pulseless and delirious; skin of extremities cold, but the expression of the countenance did not resemble that of the ordinary cholerics. Death at $11\frac{3}{4}$ P. M.

Autopsy, 20th of April, $8\frac{1}{4}$ A. M. nine hours after death.—*Frame* well-formed; body somewhat inflexible; surface slightly marbled with violet.

Cranium.—Vessels of the dura mater distended by blood, in other respects the membrane was sound. No arachnoid infiltration; vessels of the pia mater not more injected than usual; in colour and consistence the cerebral substance and cerebellum were normal, but were rather more injected than usual. The rest of the nervous system was not examined.

Thorax.—*Pericardium* dry, in other respects healthy, contained no serosity. *Heart* quite warm, contained a considerable quantity of liquid blood, in which were seen clots of a small size, which offered the same deep black colour of the blood. The texture of the heart, and that of the lining membrane, of proper consistence, though their colour is much paler than usual. Heart of normal size. *Lungs* crepitous throughout, presenting only a slight engorgement posteriorly.

Abdomen.—*Stomach* contains a considerable quantity of yellow, frothy liquid, which adhered to its internal face, and resembled mucus. Near the pyloric orifice the posterior surface in the extent of several inches was shrivelled or wrinkled—the mucous membrane covering these wrinkles was deeply injected, yet of good consistence. In the great cul-de-sac, the mucous membrane was of a whitish colour, and of its ordinary consistence and thickness. Along the small curvature it presented a punctated redness, retaining in other respects its natural character; near the pylorus, on the anterior face of the organ, the mucous membrane offered an uneven or mammillated surface for the breadth of three fingers. The stomach of its natural volume. *Small intestines* presented an augmentation of volume in all its extent, and contained a considerable quantity of yellowish liquid matter, mingled with flakes of mucus. In the commencement of the last half, this matter became whiter, and afterwards assumed a reddish tinge. The internal surface of the small intestines throughout its extent was deeply injected with blood to the extent of about a foot and a half above the ileo-cœcal valve; the usual vivid red colour of the mucous surface was interrupted by trans-

verse bands of a brownish-red, formed by the partial thickening, softening, and infiltration by blood of the mucous membrane at those points; this infiltration is so considerable, that the blood was easily forced out by slight pressure. The sub-mucous cellular tissue was permeated by an infinity of blood-vessels, and throughout offered a reddish tinge; it was moist, and the mucous membrane was readily detached from it. Of the glands of Peyer, eight were observed, having the average dimensions of three by ten lines; they were of a deep red granulated aspect. In the small intestines were found two lumbrici, and several inches of tænia.

The *large intestine* voluminous, and was filled with a liquid in consistence and colour resembling the dregs of wine, in which were found four large lumbrici, a few hydrocephali, and some fragments of tænia. The mucous membrane of the cœcum and colon was of a violet redness; that of the transverse colon whitish; in the descending colon there were several spots of a deep black colour, which seemed the product of a sanguinolent infiltration of its tissue; three similar ecchymoses existed in the rectum. The *liver* was of a dark brown, and of its ordinary consistence and volume, and contained a considerable quantity of blood, especially in its large vessels. *Gall-bladder* was distended by bile of a deep green or black hue, which also filled the biliary ducts. The *vena porta* distended by blood.

Spleen somewhat longer than usual, being five by three inches in its dimensions; its consistence good. *Kidneys* small, contained a small quantity of lactescent liquid; otherwise apparently healthy. *Bladder* contained about ℥iij. of urine, in which swin a quantity of mucous flocculi. The mucous membrane of its fundus was considerably injected.

Ovaries of double their ordinary size, and filled with black coagulated blood. *Uterus* in the natural state, with the exception of being somewhat larger than usual.

Autopsy furnished by Dr. Cooke, of Virginia.

Case IX. Salle St. Charles, No. 4. Service of M. Louis. Magnot, ætat. sixty-nine, washerwoman, entered April 14th, at 10 A. M.—Onset of disease last night at midnight, but she has had diarrhœa for the last three weeks, affecting her only in the night, and obliging her to rise about three times? For the last seven days she has felt herself considerably indisposed, and last night the stools were much augmented in number, she had no vomiting and no pain before entering the hospital, excepting very slight cramps, thirst very intense, feeling of coldness during night, attributed by the patient to her rising in the cold. Voice feeble, especially within a few hours, com-

plains of general feebleness; urine constant; limbs cold on arrival—since frictions are warm; alimentation insufficient during winter, lives in a chamber badly warmed. Actual state, 5 P. M.—Face cool, slightly moist, not violet; arms cool, very moist; inferior extremities dry; temperature more elevated than in natural state; eyes hollow; eyelids half-closed; sight obscure, often double; lips violet; hearing good; no cephalalgia, nor feeling of heaviness in head. Aphonia almost complete; tongue violet, cool, very moist; thirst intense; no nausea after drinking; no pain in epigastrium; feeling of pain in abdomen, resembling the cramps of extremities; urine involuntary; throws her arms out of bed, in consequence of her *feeling* of heat. Pulse eighty-four, regular, very small, easily counted. Respiration thirty-two, a little costal. R. Enema of flaxseed, frictions.

15*th.* Dead at 7 A. M.

Autopsy, on 16*th, at* 10 *A. M. twenty-one hours after death.*—Skeleton well-formed; moderate embonpoint; lividity of upper and lower extremities.

Cranium.—A great quantity of blood was found externally to the dura mater, generally resulting from rupture of the longitudinal veins; arachnoid very moist, considerable infiltration beneath it; pia mater injected; cerebral veins distended; substance of brain very moist; ʒx. of serum found in the right ventricle, clear and colourless; in left there was rather more. Cortical substance and corpora striata of their natural colour, and the cerebral mass in general of good consistence. Cortical substance of the cerebellum was pink, slightly violet, other parts were healthy, with the exception of a little injection of the medullary substance.

Thorax.—Pericardium healthy. Heart at least two-thirds larger than natural; this increase was derived entirely from the increase of the left ventricle, the walls of which were an inch in thickness, but its cavity rather diminished than enlarged. The semilunar aortic valves were healthy, except in their adherent portion, where there was a small induration of the thickness of a millimetre. A moderate quantity of liquid blood containing some fibrinous coagula was found in the cavities of the heart. Left pleura healthy; a little moist, and viscous, free from adhesions. Lung of same side was light, emphysematous in its whole extent, and in the posterior and inferior part was a little tumour of the size of a kidney bean, formed by these dilated vesicles. *Right* pleura was in a similar state with the left, but the lung was larger, lighter, of a pink colour throughout, emphysematous only in its inferior lobe, and without engorgement of blood.

Abdomen.—*Stomach* large, one-half larger than in the natural condi-

tion, it contained a tolerable quantity of a light green liquid, in which were suspended a number of mucous flocculi of a deeper green colour. The mucous membrane was of a reddish colour, in its whole posterior part of a deep red as also in its great cul-de-sac near the cardia, where the red colour seems to arise from a multitude of points more or less confluent. On the anterior face of the stomach near the large curvature, the red colour was not so deep, especially in the space of five or six inches, about two inches distant from the pylorus. The membrane was not mammillated. The thickness and consistence of the membrane are natural, except on the posterior face near the great cul-de-sac, where it has merely the consistence of mucus, augmenting again in approaching the pylorus where it is natural. The *small intestine* was a little larger than natural, and tympanitic throughout, it contained a grayish-red liquid in the first part of it, then a perfectly red one as fluid as water. In the liquid were some mucous flocculi, grayish and brown, floating in water, and at first sight, looking like moss. The colour of the internal surface of the intestine like the exterior, was pink in its whole length. Some glands of Brunner, much scattered, a little less than a millet seed, were observed in the first four or five feet of the intestine, afterwards they became more numerous, and not larger than a mustard seed, except in the last three feet, where their size was the same as in the beginning of the jejunum. The membrane was every where of its natural thickness even in the jejunum, and yielded on traction strips of six to ten lines, its colour was *pale white*. The sub-mucous cellular tissue is more or less injected in the whole length of the organ. The glands of Peyer were very visible in the last half of the intestine, from their white colour, which contrasts strongly with the adjacent parts, these glands are not sensibly thicker than usual. The *mesenteric glands*, were generally small except five or six, which were of the size of a kidney bean, and of a pink colour, but of good consistence. The *large intestine* was a little distended in its first half, where it contained a considerable quantity of reddish, turbid, but very fluid matter, afterwards assuming a still redder tint, until in the last fourth, where it was of a decided red. The mucous membrane was white in its first third, but shaded with red patches—the last five feet were of an amaranth red. It yielded strips of eight or ten inches, and was consequently of good consistence, except about the beginning of the transverse colon, where the strips were but six or eight lines, where the membrane is also a little thickened. The sub-mucous cellular tissue partakes of the same colour with the mucous membrane. The *liver* was of good size, and moist externally, much more easily penetrated by the finger than in the natural state;

the large lobe intensely red, and gorged with blood. The gall-bladder was distended, by a considerable quantity of grayish-green fluid. The *spleen* healthy, of usual size. The *kidneys* were of the natural size and colour. The *bladder* as large as an ordinary pear, the walls were in contact, and covered by a little yellowish white creamy matter, of the size of a hazelnut. *Uterus* small, containing no liquid, internally violet red. The *aorta* contained a tolerable quantity of blood, natural appearance. *Semilunar ganglion* grayish externally, and grayish and whitish internally. *Par vagum* white and healthy.

W. W. G.

Case X. Salle St. Charles, No. 15. Service of M. Louis. Ducaigne, æt. 56, a workwoman, living Rue Traversine, twelfth arrondissement, entered ninth instant. Has been ill four days, preceding which she had cephalalgia at intervals. Onset of the malady by pain of the limbs; feeling of weakness forcing her to keep her bed; chills between the shoulders, followed by unnatural degree of heat, and accompanied by diarrhœa and slight colic. The diarrhœa has been constant; dejections of a matter of a yellow colour, clear, liquid like water; the number of evacuations at least twenty in the twenty-four hours; vomiting commenced on the second day, patient attributes it to drinking an infusion which was administered to her; quantity vomited always greatly exceeded that of the liquid which she drank; the matter of ejections a black fluid of a bitter taste; the colics became much more painful on the second day, and still continue; slight perspiration during the second day; almost complete suppression of urine since same period; voice most changed on third day after debut, less since.

On the third day of sickness took a glass of bad wine, which was not vomited. Treatment on entrance, 9th June. Enema of infusion of flaxseed with ℈j. of laudanum; friction.

April 10th, 10¼ *A. M.*—A little better than yesterday; face of ordinary temperature; lips of good colour; sight good; eyes of natural brilliancy; hearing good; no ringing in the ears; slight frontal cephalalgia; intellect unimpaired; temperature of surface natural; colour of skin of body universally good; forearm a little marbled with violet colour; no cramps; tongue a little moist, of ordinary temperature; desires cool and sweet drinks; some nausea; oppression at epigastrium augmented by pressure; experiences no other pain at that point; rest of abdomen slight, dull pain; gurgling of intestines; abdomen tympanitic; tongue almost dry immediately after drinking; has had some dejections attended with pain since yesterday; respiration

slightly costal, and quick; pulse sufficiently large, regular, 100; voice a little suppressed. Treatment, ½ lavement of linseed with ℈j. laudanum twice; lemonade; fomentations, and sinapisms to inferior extremities.

April 11th.—Dying at 7 A. M.

Autopsy, at 4½ P. M.—Skeleton well-formed; moderate embonpoint; internal part of left thigh livid; lividity, but less marked on the lateral parts of the body; not cold; still warm on trunk and thighs; colour of muscles natural.

Cranium.—Blood very abundant on the external face of the dura mater; traces of slight sub-arachnoid infiltration; brain of normal consistence, slightly injected; cortical substance of natural colour; corpora striata of natural colour; ℥ss. of limpid serosity in each lateral ventricle; pia mater a little injected; tuber annulare slightly softened, healthy in other respects; cerebellum natural.

Semilunar ganglion thin and grayish; *par vagum* of natural, white colour and thickness, offering, however, in some parts a ramification of bluish vessels; *superior cervical ganglion* grayish, of natural form and volume.

Thorax.—Two drachms of serosity in the pericardium; heart of good size, containing a quantity of liquid blood, in which float imperfect and very small coagula. *Lungs.* Left lung adherent in whole extent by close cellular adhesions; it is soft, red internally, without evident alteration; right lung free every where; upper lobe emphysematous, very light, perfectly healthy in other respects, containing a little blood.

Abdomen.—Stomach of natural size, containing some kidney beans, and a considerable quantity of greenish, viscid mucus, without other liquid; (many crypts observed in œsophagus;) internal aspect of the stomach universally grayish, spotted with red, a little dark in some points; mucus very adherent to the membrane in a part of the anterior face: mucous membrane very mammillated in the great cul-de-sac near the cardia, and evidently thicker than natural, yielding strips of two to four lines; no mammillation in other parts; mucous membrane of natural thickness and consistence upon the posterior face of the stomach near the cardia and the pylorus; near the small curvature is a slight, whitish, and opake projection near an inch long, around which the adjacent portions of the membrane is radiated; the membrane covering this projection is thinner and more adherent than elsewhere—the elevation is caused by the thickening of the subjacent cellular tissue. *Small intestines* externally more or less gray in first half, red or livid in five or six last feet; a little

more voluminous than natural after commencement of the jejunum, containing in the first three-fourths a quantity of yellowish-green mucus; reddish mucus in the fourth, fifth, and in the last three feet a chocolate-coloured matter; internal aspect of the intestine in general that of the matter with which it is in contact; slight *arborization* of the mucous membrane in jejunum; in the middle portion of the ileum is observed a livid redness, which afterwards completely disappears, and is replaced in the last eighteen inches by a blackish-gray tint, which is unequal in colour; thickness of mucous membrane every where good; strips of three to five lines in first four-fifths rarely less or more; in last eighteen inches larger or smaller; *crypts of Brunner* numerous, and a little larger than millet seed in last eighteen inches; plates of Peyer universally healthy. *Large intestines* at least doubled in size; externally, colour of bluish-gray, containing a large quantity of gas; a liquid of a dark chocolate colour abundant in quantity in its whole extent; in this liquid was found a lumbricus of eight or ten inches in length; grayish flocculi like dregs of wine float in it; they offer no resistance to pressure, and are extremely soft; mucous membrane of cœcum of dark, livid red, unequally diffused; similar but less interrupted in ascending colon; in three-fourths of the first part of transverse colon colour natural; afterwards violet-red like that of the cœcum; in descending colon, and in a small part of the sigmoid flexure, and in the rectum, redness diminished—it is analogous to that of the subjacent cellular tissue, which is ecchymosed or infiltrated with blood in the reddest part; in texture the membrane is softened, muciform in cœcum; strips of two or three lines obtained—in colon of eight—in transverse colon, where colour is natural, ten to twelve —two to eight where colour is violet—one to two in the brownish parts of the rest of the colon; moderate consistence in the other parts. *Liver* of good size and healthy. *Gall-bladder* contains a tolerable quantity of very dark-green fluid. *Kidneys* of good size, a little pale in the cortical substance, in other respects healthy. *Spleen* scarcely larger than natural; reddish-black at lower extremity; suitable consistence in the whole extent. C. W. P.

Case XI. Salle St. Paul, No. 17. Service of M. Louis. Dezot, æt. 62, living in the eleventh arrondissement, shoemaker, entered 15th, at noon; at 6 P. M. I saw the patient, and collected some particulars of his case; he was cold, much prostrated, livid, pulse insensible on left side, and upwards of one hundred on the right, but extremely feeble and difficult to count with accuracy. Respiration was thirty-eight, very costal; he was then vomiting a large quantity of a

transparent liquid, mixed with mucous flocculi; since his entrance he had vomited basins full; he was excessively prostrated, and the answers obtained could not be perfectly depended upon; still he seemed to refer the commencement of his disease to the day but one preceding his entrance. Visit of M. Louis, 16th, at 8 A. M. Patient states that he has had "a cold" since January, attended by emaciation. He has lived during the winter in a damp closet in the seventh story, immediately under the roof, and at times has absolutely wanted food. On the first day of his disease he had eight or ten watery discharges, with borborygmi, but without colics. Vomiting did not occur until the morning of the 15th, while upon the litter on his way to the hospital; it had however been preceded by nausea which was not caused by the drinks which he took. Cramps more violent in the inferior than the upper extremities, come on at the same time with the vomiting and have been repeated since his admission. The thirst has been intense, and the urine suppressed from the commencement of the disease. He has suffered from the sensation of cold during the whole disease, and on his entrance last evening, his face was cool and his nose cold to the touch. The respiration has never been impeded. Before his entrance he took no active medicine, and confined even his domestic remedy to sugared water. Since his admission he has taken a potion consisting of alcohol and laudanum much diluted, without vomiting; has had five or six stools since his entrance, but no perspiration.

Present state, April 16th, 8 A. M. The expressions of his face denotes fatigue; the eyes are moderately hollow but of their natural appearance; the cheeks are cold, the nose still colder, but the limbs and body of the natural temperature; perhaps a little lividity of the face; lips are violet; folds made in the skin of the neck are slowly effaced, and the same phenomenon was observed in that of the upper part of the chest, but in a less degree; sight was unimpaired until to-day, but now he sees surrounding objects as if through a blue medium; ringing in the left ear, which has existed for several days; intelligence perfect; voice feeble, but less shrill than yesterday; pulse eighty, feeble, regular, and less sensible on the left than the right side; respiration twenty-eight, high but equal; tongue cool, whitish at the sides, of natural colour at the centre, but dry; thirst, but desires tepid drinks; abdomen retracted; epigastrium sensible to pressure, and constantly painful; the sensation being compared to that of oppression, on inspiration; a similar pain but still more severe existed in the lower part of each side of the chest; five or six dejections since entrance; urine suppressed. Lemonade; injection of flaxseed;

potion consisting of ℥j. alcohol, ℥j. of syrup, and ℥vj. of vehicle—℥ss. every hour.

4 P. M. Cheeks a little cooler than in the morning; drowsiness constant but easily dissipated; sight troubled, but no blueness of objects; hands livid blue; feels more feeble; voice more disguised than this morning; pulse still very feeble, eighty-eight; respiration costal, twenty-eight; tongue dry and cracked, but not coated; epigastrium less sensible to pressure; no nausea, vomiting, cramps or stools; urine passed several times, and involuntarily. Continue prescriptions with frictions to limbs.

17*th*, 8 *P. M.*—The frictions were used as ordered with a brush, until he was warmed, and complained of their force. His face is now cold and livid, but less than the forearm; speechless, or uttering inarticulate whispers; no pulse; respiration very frequent; great dyspnœa; temperature of the abdomen is natural; stupor, lying with his mouth half-open; a strong rattle has existed during the last three hours; he has not vomited nor suffered from cramps; several dejections. Sinapism to thighs—alcoholic potion. Death in the night.

Autopsy, at 8½ *A. M.* 18*th April.*—Skeleton well-formed and moderately large; moderate emaciation, but little cadaveric rigidity; inferior extremities, especially the knees, were bluish and livid; muscles of natural colour and firm.

Cranium.—A considerable quantity of blood was found in the external face of the dura mater; moderate sub-arachnoid infiltration, and injection of the pia mater; at least two and a half ounces of serosity were found in the right lateral ventricle, and nearly the same quantity in the left; the septum lucidum was ruptured at its posterior part, but not softened; the whole encephalon was of good consistence; the cortical substance was livid, pink, and much deeper in its colour than ordinary; the corpora striata presented an analogous appearance; the medullary substance was injected in a remarkable degree, and besides marked with light lilac streaks; some hydatiform cysts in the posterior part of the choroid plexus; a slight effusion of blood was found at the base of the brain, about one or two lines in thickness, and between the sphenoid bone and the occipital foramen, no coagulum visible; the veins of the ventricles were distended with blood; cerebellum like cerebrum, was marbled in its medullary substance; nothing remarkable in the rest of the brain. The examination of the cranium was made at 3½ P. M.

Thorax.—The *pericardium* was universally adherent to the heart by slight cellular connexions; externally it also adhered to the left lung; heart was of moderate size, a little flabby, of normal thick-

ness of parietes, containing a quantity of liquid blood with some coagula of irregular form, besides a yellowish, fibrinous coagulum of moderate size in each ventricle; the *pleura* of the *left side* was healthy, except some partial adhesions; the left lung was grayish-blue externally, the upper lobe was slightly emphysematous, and the lower a little heavier than natural, containing much blood without globules of air, but not splenetized nor hepatized; towards the base of the fossa, which separated the two lobes, was a very elastic tumour of the size of a hen's egg, formed by a rupture of the vesicles of that part; only a few filaments remained, sinking as soon as the tumour was opened; the base of the tumour formed by the lung offered some flattened blood-vessels of large size, half a line in diameter; one or two of them were from a line and a half to two lines, opake, without valves, and terminating in the primary divisions of the pulmonary artery; no other lesion observed. *Right lung* partially adherent, heavier and more voluminous than the left; the inferior lobe was less elastic than that of the other side, granulated, and manifestly hepatized; the upper lobe was emphysematous upon its narrowest edge, but without projection of the vesicles, which are only increased to three or four times their normal size; in the summit of the lung there was an unequal, lobulated tumour, separated from the contiguous parts of the lung by a furrow of some depth; it was very elastic, as if formed by air, and semitransparent, but divided into lobular projections by little white lines, a third or a fourth of a line broad; upon cutting into the tumour it instantly sank, presenting at its base an appearance like that of the other lung, but without the vessels.

Abdomen.—The stomach was of small size, containing a moderate quantity of greenish-yellow mucus, tolerably adherent to the membrane, but without any watery fluid of any kind; the internal aspect of the stomach was grayish and reddish, uniformly diffused, except along the small curvature and in the great cul-de-sac, where the redness is very unequal, mixed with gray, and in spots. The membrane was mammillated along the large curvature within the three inches nearest the pylorus, and the same space adjoining the cardia; these portions were covered with a more tenacious mucus than the rest of the membrane; the thickness and consistence every where normal; and when the membrane was raised up it was evidently grayish, the reddish shade depending upon the injection of the sub-mucous cellular tissue. The small intestine was a little meteorized; its colour externally was grayish and reddish, but unequal, except in the last four feet, where it was green or bluish; it contained in its first half a yellowish-red mucus; in the second half, a turbid, very fluid and

abundant livid red liquid; the mucous membrane is similar in its general appearance to the exterior of the intestine; its thickness is normal; the strips yielded upon traction, are three to five lines long, except in the five last feet; in this latter the membrane itself is green ish, but in other parts it is white, or only a little injected, the colour depending upon the subjacent cellular tissue; this injection is most marked in the five last feet; glands of Peyer grayish, but scarcely visible; those of Brunner widely separated, found only in the five last feet, a little larger than a millet seed, near the valve they were rather numerous and a little larger.

Large intestine of ordinary size; contained a large quantity of a grayish-red liquid, not very fluid; the colour became deeper in approaching the rectum; the mucous membrane was of a grayish colour, at intervals slightly tinged with livid pink in its first third; grayish livid red in the eighteen or twenty inches which succeed, then grayish only, but afterwards grayish-red, except in the last two feet, which was brown, and exhaled a manifestly gangrenous odour; the last two feet were also marked with blackish-red spots of the average diameter of half a line, without manifest destruction of the membrane; the thickness in the first third of the mucous coat was a little increased, where it yielded strips of only one to three lines, and was slightly injected in its thickness in some points; after the first third it was thin, but less adherent to the subjacent tissue than usual, and the strips were at intervals longer or shorter without reference to the colour of the membrane; the submucous cellular tissue was incomparably more injected than the mucous coat; no crypts were visible. The *liver* was of the usual size, and offered in the upper part of the right lobe a yellowish, hard, encysted tumour, of the size of a hazlenut; the tumour looked like the matter found so often in the aorta of old persons, having the same semicrystalline appearance; some grayish-yellow spots in the upper part of the middle portion, which did not project beyond the surface of the liver, but penetrated into its tissue for the depth of five or seven lines, and were then lost in it without offering any difference of structure or consistence; the liver was of deeper colour than usual; its substance was finely granulated; the gall-bladder was distended by a large quantity of greenish-black fluid, which was moderately viscous; the spleen was of good colour and ordinary size, a little softer than natural; the *kidneys* were healthy and rather pale; the bladder was of the size of a small pear, containing a turbid, whitish fluid; the mucous membrane of natural thickness, but yielded strips a little shorter than usual; par vagum white, of

usual size; the *superior cervical ganglion* was whitish or gray, small and firm; the middle ganglion also small; semilunar ganglion was of moderate size, gray, in parts slightly tinged with pink, both externally and internally; the mesenteric glands were small, except in those corresponding to the last five feet of the intestine where they were larger and livid red.

This case and the three following present the complication of pneumonia, which frequently occurred towards the termination of the disease. W. W. G.

Case XII. Salle St. Paul.—Orsin Edmonds, æt. 52, pedler, living Quai et Isle St. Louis, admitted April 12th. His habits are temperate; general health good; his alimentation good, and has always used a certain quantity of wine at dinner. On the 9th of April, diarrhœa with constant guggling in the intestines, with anorexia, and pain upon evacuation were manifested. At first the dejections were four or five in the twenty-four hours, but constantly increased in number. Yesterday, (April 11th,) at 5 P. M. sudden augmentation of the diarrhœa, attended with great feebleness, great thirst, cephalalgia, indistinct sight, and loss of voice. At 7 o'clock vomiting ensued, and an hour afterwards cramps came on, commencing in the feet and extending to the legs and thighs, and subsequently to the arms, but were much more intense in the lower extremities. Urine has been almost entirely suppressed since 5 P. M. At 5½ P. M. he was brought to hospital on a litter. Twenty-five leeches have been applied to the epigastrium, which have detracted a good quantity of blood.

April 12th, 10 *A. M.*—Present state. Face, even the central parts of it, of a natural temperature; countenance elongated; eyes a little sunken in the orbits; sight confused; hearing good; aphonia almost constant; (it momentarily disappears when the patient makes great exertion to speak;) suffers less from cramps since he has been rubbed and warmed by hot linen applied to the chest and abdomen; heat of the body natural in the upper and lower extremities; folds of the skin, (made by raising the skin between two fingers,) disappear very slowly as on the dead subject—(this is a constant symptom in true cholera;) skin is not livid; tongue somewhat moist, whitish, of a slight violet at the edges; intense thirst, desires cold and acidulated drinks, no nausea after drinking; breath cool; no pain in the epigastrium since application of the leeches, but previously the patient had experienced a slight lancinating pain; no stools the last two hours; the last which has been observed by us was a liquid, the general appear-

ance of which resembled that of clear, thin rice porridge or soup, with flocculi like the swollen rice; experiences slight colics upon going to stool; urine suppressed; no borborygmia; oppression since last night; pain in the right and left side during inspiration; pulse very weak, threadlike, difficult to count, 120; respiration twenty-four, somewhat costal; the patient feels very weak, and inclined to sleep; intellectual faculties perfect. Prescription—Lemonade, ¼ enema of linseed decoction, with ʒss. of laudanum (Sydenham's) every two hours, with frictions every two hours.

4 P. M. Patient feels better; suffers less on the sides of the chest; no vomiting nor head-ache; pulse 112, more developed than in the morning; respiration rather frequent; hands are warm; face is cold, without being very blue; no sensation either of heat or cold in the face; aphonia and suppression of urine persist with stupor. Prescription—Sinapism to the lower extremities.

April 13th, 9½ *A. M.*—Natural heat of the body and extremities; temperature of the face natural except the nose, which is cold; less pain of the chest; aphonia diminished; sight good; some nausea without vomiting; respiration easy; three evacuations without urine during the night. Prescription—Lemonade, 2½ enemata of linseed decoction; emollient cataplasm on the pit of the stomach; friction of the lower extremities every two hours.

5½ P. M. Face cold, particularly the nose; countenance without expression; lower extremities pretty warm; folds of skin disappear slowly; almost complete aphonia; hearing and sight good; no head-ache; no vomiting; guggling of intestines easily determined by pressure of the abdomen; three dejections during the day; slight coma almost constant. Sinapisms to lower extremities; frictions every hour.

April 14th. Morning visit. Expression of countenance same as yesterday; upper extremities cold, but not changed in colour; integuments of the thorax of livid colour and violet; no sense of pain any where, except in the abdomen upon pressure, which immediately produces borborygmus; tongue very moist, yellow and cold; no thirst, obliged to force him to drink; no vomiting or stools; no urine. Prescription—Tea as drink, composed of infus. of tilleul and orange-flower water, ℥iv. alternately with alcohol, ℥ss. administered in table-spoonful dose every half hour.

Death at 3 P. M.

Autopsy, eighteen hours afterwards.—The frame is well-formed; the face and the lower extremities of an unequal, (marbled,) violet colour; the subject is not very fat; cadaverous rigidity not very re-

markable; body quite cold; muscles of normal consistence and colour.

Cranium.—Considerable sub-arachnoid infiltration of a red serum; pia mater injected; substance of brain also injected, and remarkably soft; cerebellum pale externally, medullary matter of violet colour; ℥ss. of serum in each lateral ventricle.

Pneumogastric nerves sound in regard to thickness; presented some violet spots on exterior surface, which did not exist internally. *Superior cervical ganglia* of middle size, gray, very dense. The *semilunar ganglia* grayish in their entire substance, thin, and very firm.

Thorax.—The pericardium, viscous exteriorly, very moist internally, but without serum; heart full of a large quantity of blood in part coagulated; the blood of the right auricle forming an enormous black clot; heart a little larger than ordinary, due to a slight hypertrophy of the left ventricle, the parietes of which are very firm. *Lungs.* The left lung adhered in a part of its extremity—its upper lobe light, and of a vivid red, but sound; the inferior lobe heavy, of a deep red, containing a small quantity of blood; its texture is not granulated as in pneumonia, but as if splenified; on the right side less adhesions than on the left; upper and lower lobe equally heavy; the upper hardened and granulated, hepatized, black in part of its extent; the lower of the same colour, not granulated, but splenified; both lobes offer a small quantity of blood mixed with air.

Abdomen.—Stomach of the middle size, containing a moderate quantity of a limpid, green liquid, in which are flocculi of mucus of the same colour, whilst others adhere in a slight degree to the corresponding mucous membrane. The mucous membrane presented some red spots here and there in all its extent, more along the small curvature than in any other part, offering an imperfect mammillated appearance. In the vicinity of the pylorus, it is more or less injected in all its substance; it is of normal thickness and consistence in all its extent, with the exception of the great tuberosity near the cardia, where it is somewhat thicker than natural, and presents the mammillation pretty well characterized.

The small intestine gray and red externally, containing a yellowish, thick mucus, abundant in the first half; the mucous membrane is more or less injected in all its extent, particularly in the three first feet of the ileum, much less afterwards; it is of natural thickness in all its extent, giving strips of six or seven lines in length in every part except in the four or five last feet; in the parts where it is less injected the strips are from two to four lines, and in the parts where

it presents nothing remarkable the strips have less extent; Brunner's follicles less in size than a grain of millet, are numerous in the four last feet of the intestine, increasing in number and volume as we approach the lower extremity near the cœcum; Peyer's glands are scarcely visible; mesenteric glands are of a small volume generally, except two or three near the jejunum and liver, which are of the size of a kidney bean.

The large intestine of a natural volume, containing a small quantity of a white liquid, slightly grayish, in which are suspended some mucous flocculi; the mucous membrane is grayish in all its extent, interspersed with spots, some of a livid rose colour, others very red, particularly in the ascending colon and rectum; some follicles with a central point in the entire extent of the intestine, and are placed ordinarily near each other; the mucous membrane throughout of natural colour and consistence, except in cœcum and in the beginning of the colon, when the strips are not more than one or two lines in length. In the rectum are three green spots separated from the rest of the membrane by a narrow furrow; the parts near this furrow are of an intense red; the membrane is a little thicker than in the neighbouring parts; it is green in its entire substance, and has a gangrenous odour.

The *liver* moist externally, of normal size and consistence; redder than in the natural state and containing an unusual quantity of blood; the gall-bladder distended by a great quantity of bile, of a blackish-green colour. *Spleen* large, but sound. *Kidneys* of a livid colour, but of natural consistence and volume. *Bladder* contracted; contains a small quantity of thick urine; the mucous membrane sound.

Case XIII.—Salle St. Paul, No. 17. Service of M. Louis. Galopin Pierre, aged sixty-nine, cooper; Barrière of Fontainebleau, No. 4, 12th arrondissement; widower. Entered 19th of April, 9½ o'clock A. M. Previously to the 14th, he was in perfect health, he was then taken ill, but became much worse on the 19th, at 3 A. M.

He passed the winter in a sort of vault, six feet deep, sleeping upon straw; lately he has lodged in a garret, but with a sleeping place of the same materials. His food has been scanty, he has passed whole days without eating, but at times he has committed excesses. On the 14th he was taken with diarrhœa, which has persisted with a little diminution, in the first twenty-four hours about fifteen evacuations; he had no colics, but much borborygmus. The appetite slightly diminished from the commencement. At three this morning, commencement of cephalalgia, he was seized at the same time with very

painful cramps, which commenced in the lower extremities, and then attacked the upper, but less severely, and simultaneously with vomiting, at first of a bitter matter, but afterwards of an insipid liquid. The thirst became very intense, but it had existed since the 14th; the urine also was still abundant. Feebleness of the voice occurred for the first time—a feeling of oppression which came on then, has since diminished. Chilliness was perceived for the first time, during the night. No sleep.

19*th*, 11 *A. M.*—Eight hours after the commencement of the grave symptoms. Expression of face natural, excepting an air of stupor; the lips are blue, and the rest of the face slightly livid. The nose is cool, cheeks a little warmer; the neck is of good temperature; the folds of the skin are there slowly effaced, on the chest they quickly disappear, but on the arms very slowly—forearms a little cool. The right eye, which is the only one remaining, is not evidently excavated. Frontal cephalalgia. Sight troubled at present, last night surrounding objects seemed bluish; hearing good. Voice extremely feeble. Yawns continually, but does not appear anxious. Pulse 72, small, feeble, and occasionally irregular. Respiration 18, moderately costal; air expired warm. Tongue tolerably moist, of good temperature, and whitish. Thirst intense, he prefers sour drinks of the temperature of the air; drank some lemonade before us with pleasure, and without nausea. Vomited soon after his entrance a reddish liquid, at the bottom of which were some mucous flocculi, of similar, but deeper colour; the redness was owing to a little pure wine, which he had taken before leaving his house, the wine caused no nausea, or other immediate uneasiness. No alvine discharge, and no urine since his entrance. Severe and frequent cramps in the feet exciting contortions of the face from their pain. No oppression or pain in the epigastrium, or in any part of the abdomen, but after taking the lemonade, he complained of a cramp confined to a small part of the epigastrium, and apparently muscular. Ordered frictions every two hours—sinapisms to inferior extremities. Iced lemonade. One-fourth enema of flaxseed, with ʒj. tr. opii, every two hours.

5 P. M. Complains bitterly of the pain caused by the application of sinapisms to his thighs for half an hour, they were removed just before the visit; in continual agitation. The sinapisms were each twenty-four square inches in extent, and have reddened the skin; however, in the midst of his pain he is gay, and jests with the nurse. Vomited twice since the morning, the first fluid was still reddish, the second yellowish-red, was abundant, and contained much light mucus in suspension. Two dejections, not copious, and consisting

of a gray liquid, slightly tinged with green, containing much mucus in small flocculi, but much smaller than those in the matter vomited. No urine. Cramps increased, both in the upper and lower extremities, in spite of the frictions which were repeated two or three times. Hands are cool; face same state as in morning; temperature of trunk natural. Pulse very small, 80, regular. Respiration frequent, and proportioned to the anxiety of the patient. Tongue whitish and cool; intense thirst; no nausea after drinking. Some *twisting* pain near the umbilicus since the application of the sinapisms.

Continue frictions. Cataplasm to the thighs if pain continue.

20*th*, 8 *A. M.*—Soon after the visit of last evening, the pain from the sinapisms became tolerable, but it has not yet entirely ceased, and the skin is red, hard, and elevated in that part. He has not vomited. The dejections were numerous, but small, so that in the whole they fill one-fourth of a basin, they are liquid, greenish-yellow, and at the bottom are some mucus and yellow fragments like fæcal matter. Urine passed, but not abundant, no heat in voiding it. Abdomen retracted without pain. No cramps. Respiration 16, a little costal. Pulse 80, regular, without particular characters. Nose rather cool, less so than yesterday; temperature of rest of the body natural. Less anxiety, some disposition to sleep. Little cephalalgia; hearing good; folds in the skin of the neck slowly effaced. Ordered Seltzer water iced, sol. syr. gum.;—half enema of flaxseed, twice. Diet.

4 P. M. No nausea, vomiting, or cramps. No urine. Two stools of yellowish liquid, containing many mucous flocculi. Much prostration. Temperature of the face natural, except the nose, which is cool; rest of the body natural. Attitude relaxed. Thighs at least as red as last evening; the traces of the pressure of a finger remain visible for some time, from their paleness and depression. Pulse 80, rather small and weak. Respiration 22, rather costal. No pain at the epigastrium, but a little at the umbilicus on pressure, no borborygmus. Ordered antispasmodic potion, ℥v. with ℥ij. alcohol, and ℥j. of syrup of orange peel.

21*st*, 8 *A. M.*—Stupor almost constant, dullness of intellect, without delirium. Temperature of surface in general a little higher than natural, except the left cheek and nose, which are cool. Skin inflamed by sinapisms, is still sensible, and harder than the neighbouring parts. The folds of the skin of the neck are very slowly effaced. Voice not extremely weak; severe feeling of oppression at the epigastrium only. Pulse 84, regular, full. Respiration 22, elevated. Tongue white at the edges, yellowish at centre. Thirst; anorexia;

no cephalalgia, cramps, or vomiting; constipation. Urine suppressed. Ordered, sol. syr. gum. iced, two pots. Antispasmodic potion with ℥j. syrup of white poppies, and eight drops of ether, ℥ss. every half hour—one-fourth ration of broth diluted, three times.

Dead 3¼ P. M.

Autopsy, sixteen hours and a half after death. April 22d.—Frame large, well-formed; moderate embonpoint; some lividity in the internal part of thighs. The skin, where the sinapisms were applied, is thickened. Cadaveric rigidity considerable. Complete coldness. Muscles of good colour, and perfectly healthy.

Cranium.—External face of the dura mater covered by a large quantity of blood. The arachnoid was very moist; opake nearly in its whole extent, with universal and very considerable infiltration beneath it. Pia mater very moderately injected. Brain very moist, tolerably injected and firm. The cortical substance paler than natural; corpora striata of normal colour. At least ℥iss. serosity in each ventricle. Cerebellum, medulla oblongata, and annular protuberance without appreciable lesion. Spinal marrow of normal size and consistence in its whole length; the neurilema a little injected. The nerves arising from it offered nothing unusual, except a slight injection of their neurilema. Cauda equina healthy.

Larynx healthy. The œsophagus presented many crypts, especially inferiorly; the mucous membrane was every where firm, and covered by its epithelium.

Thorax.—The pleura of left side contains ℥ijss. of serosity. The inferior lobe of the left lung is heavy, firm, of a reddish-brown interiorly, light brown externally, adhering to the pleura in its whole extent; the superior lobe is light, not engorged with blood, but containing at its lower portion a great quantity of spurious blood. The inferior and middle lobes of the right lung are manifestly hepatized; the upper lobe natural. *Heart*, is much enlarged; contains a great quantity of blood, with reddish coagula in pulmonary arteries and veins. Parietal of the left ventricle, generally eight lines thick, in some places even an inch, the ventricula septum is unusually thickened; the muscular substance is very firm. The right ventricle has its walls of the normal thickness. *Abdomen.* Stomach of a large size, nearly doubled, containing a pint of a tolerably thick, yellow liquid mingled with mucus; a small quantity of mucus adheres to the great curvature at three inches from the pylorus; the exterior face of the stomach is of a moderately deep livid pink colour; the internal face in the middle two-fifths of its anterior part is similar in colour to the exterior; in the anterior superior part of the great tuberosity

the pink colour becomes much lighter; in this portion of the stomach are observed many white points either elongated or circular, the largest of which is not more than half a line in diameter, and none offers any perceptible prominence. In those portions where the pink colour is observed, the mucous membrane is evidently mammillated. Besides this coloration, red spots much more deeply coloured are seen in the whole extent of the small curvature, particularly at its superior part; these spots are sometimes confluent; the space which they cover is a breadth of two or three inches; below they are more rare, and occupy a much less extent; the mucous membrane is of the normal thickness, notwithstanding the great dilation of the organ, giving strips of two to three lines in the great tuberosity; four to eight in the great curvature, and from ten to twelve in the small.

Small intestine more or less tympanitic throughout its extent; colour externally universally reddish, and contains in its two first feet a tolerably large quantity of a yellow liquid, which is not very fluid; the liquid subsequently increases in quantity, and contains a large amount of yellow mucus; evacuating the intestine of its fluid contents a large quantity of mucus adheres to the membrane; the internal face of the intestine is paler than the exterior; the mucous membrane is occasionally injected with very fine ramifications, whilst the subjacent cellular tissue is universally so, though the colour is not so deeply red; where the tympanitic expansion exists the mucous membrane is a little thicker than in the normal state, and gives strips by traction of two to five lines, (friable) in all its extent, except in the last two feet, where the colour is of a green tint, and the strips are eight to ten lines long. Glands and crypts of Brunner observed in the last five feet of the ileum, increasing in size as we approach the cœcum, where they are of the size of a grain of millet, and distant from each other a line or less. Peyer's glands are not very apparent, of a reddish-gray colour, of a thickness greater than natural, but which is more sensible to the touch than to the sight. Mesenteric glands generally of a larger size than usual, being that of a kidney bean, and having ordinarily a violet-red colour—others are of a fawn colour.

Large intestine of medium size, containing a yellow matter, moderately fluid, and of a fæcal odour. The internal face of the cœcum and half of the ascending colon offer a grayish colour sprinkled with red spots varying in intensity, which are smaller but more numerous in the cœcum than in the first half of ascending colon; the other half of ascending colon and the transverse portion is generally of a light pink, afterwards the colour is a grayish-white; mucous membrane

of the cœcum and colon give strips of only two to three lines in length. *Liver* of good size, firm, coherent, externally and internally somewhat pale; this paleness is apparently greater, owing to the prevalence of pale gray spots. Gall-bladder filled with a yellow, turbid liquid.

Spleen rather over medium size, healthy. *Bladder* contracted to size of a moderate-sized pear, (bell-pear;) parietes have a thickness of three or four lines, slightly consistent, and contains a small quantity of thick, white liquid.

Aorta contains a great quantity of liquid blood; superior vena cava considerably distended with blood, thirteen lines, (English,) towards its upper part.

Semilunar ganglion slightly gray in its extent, and of a medium volume; the thoracic ganglion concurring in its formation, white and healthy; some venous ramifications are developed in all the branches of the par vagum of right side, otherwise it is healthy.

The upper and middle cervical ganglia of right side are elongated, fusiform, running into each other so as to present the appearance of but one ganglion of about three inches and three-quarters in length, and from one and a quarter to one and a half inches broad. Ganglia of left side of neck have their normal appearance. Phrenic nerve perfectly sound.

Case XIV.—Salle St. Charles, No. 9. Service of M. Louis. Balouviére, æt. 39, a seamstress, living in the Rue Mouffetard, unmarried. Entered April 18th, at 10½ A. M. Taken ill on the 17th, at 3 P. M. She had felt slightly unwell for a week previously, but only ceased working on the 17th. Food was frequently insufficient during the winter, and usually consisted of potatoes without meat or wine. Her room is dry but not warmed by a fire. For the last six weeks her food has been a little better than usual. During the week preceding her illness, her appetite had diminished; she had pain in the limbs, but no nausea, vomiting, nor diarrhœa. Within the last three days only she has felt some borborygmus, and during the epidemic nursed no patient, although she has seen a number. The disease began with *severe* diarrhœa, accompanied by frequent colics, which were most painful around the umbilicus; these pains invariably preceded the discharges; the dejections were *always* more or less yellow. Vomiting came on four hours after the diarrhœa, and was repeated eight or ten times; the matter was bitter, but white, without any shade of green. The cramps appeared with the diarrhœa, before the vomiting; at first only in the legs, but on the second day existing

both in the arms and legs, and much more painful than the colics, exciting loud cries. Urine suppressed since the commencement. Sight never impaired. Some tinnitus aurium. No chill at the beginning.

19*th*, 10¼ *A. M.* Forty-three hours since the attack. The cramps were diminished by the application of sinapisms to the legs. She has vomited five or six times a matter composed of her drinks without peculiar taste. Two injections with laudanum were given which have been followed by no stool. At present there is a universal air of anxiety; the face is pale without lividity; the cheeks and nose were cool, the rest of the face of normal temperature; hands and forearms cool, and constantly uncovered by the patient; inferior extremities of normal temperature; she complains of no sensation of heat nor cold, but uncovers her chest and arms to relieve her oppression; eyes deeply sunken; sight perfect; hearing good; no tinnitus aurium at present; intelligence developed, and narration correct; aphonia, as from the beginning of the disease; respiration thirty-six, rather costal; pulse one hundred, very feeble and filiform, but easily counted; intense cephalalgia, but less than yesterday; frequent sighing and complains of feebleness; the folds in the skin of the neck are slowly effaced; sensation of oppression along the sternum and at the epigastrium, and at the latter a pain compared to a sort of pinching; tongue a little cool, moist, bluish, whitish in the centre; thirst, desiring cold and sour drinks, but rejecting them by vomiting soon afterwards; *no* colics *nor* dejections; urine suppressed. Seltzer water; sol. syrup. gummi; one-fourth injection of flaxseed, with ℈j. laudanum, twice. Cataplasm to abdomen.

4 P. M. Expression of face calm; coolness of the nose and left cheek only; arms and forearms of normal temperature, but hands a little warmer; aphonia; sight perfect; frequent hiccough; pulse one hundred, less feeble than in the morning; tongue less moist than usual, clear at the edges, but whitish in the centre; some sensation at the epigastrium, to which the cataplasm was not applied; vomited twice, but only the drinks she had taken; retained the only opiate injection she has taken half an hour, but no other discharges; no colics or cramps; suppression of urine. Sol. syr. gummi; Seltzer water; antispasmodic potion, with ℥j. syrup of white poppies, and ℥ss. orange-flower water.

20*th*, 7½ *A. M.* Since last evening one dejection with some urine; a little nausea and vomiting; no cramps; imperfect sleep; no perspiration; expression of face natural, without increase or diminution of temperature; upper extremities of natural warmth; pulse ninety-six,

small and feeble, but regular; tongue tolerably moist, clean, and neither livid nor red on the sides; thirst, with desire for cold and sour drinks; a little uneasiness at the epigastrium, compared to a sensation of weakness and without heat, but no pain upon pressure in any part of the abdomen. Sol. syr. gummi; iced Seltzer water; antispasmodic potion, with ℥j. syrup of poppies, and gtt. iv. sulphuric ether; injection of flaxseed.

4. P. M. Ate an orange, swallowing the pulp about two hours ago; felt oppression at the epigastrium immediately afterwards, and vomited five or six times a transparent fluid mixed with the orange; before eating it one or two vomitings, but generally she felt much better and now regrets her imprudence; the potion was taken for the first time immediately after eating, without appreciable effect; at present, the feeling of weight at the epigastrium persists; a little hiccough, was dissipated by the vomiting; face warm, a little flushed, with expression of anxiety; heat of the rest of the body natural; cephalalgia; numbness in the hands, but no cramp; respiration twelve, high and interrupted by sighs; tongue moist, warm, white only at the centre; no urine, and but one dejection. Injection of flaxseed, continue potion.

21*st*, 7½ *A. M.* After the visit of last evening, vomited twice portions of the orange, and afterwards a green fluid with thick mucus at the bottom; slept at intervals during the night; no hiccough until this morning, when it returned with less violence; no dejections or urine; a little subsultus tendinum in the right arm only; no cramps; face calm and natural, but the left cheek and nose are still a little cool; a little frontal cephalalgia; intelligence obtuse; pulse ninety-two, regular but small, and counted with difficulty; tongue moist, but yellow, and coated at the centre to a more considerable extent; a little appetite, asking for broth; no nausea; no pain at the epigastrium. Sol. syr. gumm.—potion to be continued.

4 P. M. Stupor, sometimes but not always interrupted by applying the hand upon the patient; cheeks livid rose colour, and like the whole surface warm; folds of the skin effaced less slowly than during any previous visit; eyes remain half-closed; lying on the back, muscles relaxed, with general air of prostration; slight frontal cephalalgia; answers slowly to questions, but smiled when suspected of deafness; stupor returns immediately after replying; frontal cephalalgia; pulse ninety-two, characters same as in the morning; respiration fourteen, costal but regular; voice changed and slightly nasal, as in certain cerebral diseases; tongue less moist than usual; no pain in the epigastrium but uneasiness, as if from muscular fatigue, similar to those she

feels in her limbs, and in the abdomen; some tympanitis; pressure she assures us diminishes the pain in the abdomen; no information could be obtained as to her other symptoms. Fifteen leeches to the neck immediately; sinapisms to extremities; injection of flaxseed twice.

22*d*, 8 A. M. Extremely prostrated, moribund. Death at 2 P. M.

Autopsy, 23*d April*, 9 *A. M. nineteen hours after death.*—Skeleton well-formed, of middle size; very moderate embonpoint, lividity of the internal part of the thighs. Body perfectly cold, and rigidity of the muscles very great.

Cranium.—The external surface of the dura mater was covered by numerous drops of blood. A few drops of serum, only beneath the arachnoid. The pia mater was particularly injected in the sulci only. The cortical substance of the surface was paler than natural, that of the corpora striata was perfectly normal. The medullary portion was a little more injected than usual, and universally tinged with a delicate shade of lilac, but less deeply at the base than the summit; in a few small spots the colour was nearly natural. The consistence of the cerebrum was very good. Two ounces of serosity were found in each ventricle, a little less in the left than in the right. The cerebellum, annular protuberance and medulla oblongata were perfectly normal in appearance.

Spinal marrow, an ounce of serosity was found at the inferior part. The colour and consistence not apparently altered. The nerves arising from it presented nothing but some red lines externally, the result of the same slight vascular injection which existed on the neurilema of the medulla spinalis. The sciatic nerves were traced, but nothing was observed except the injection of their tunic. The phrenic and pneumogastric were traced through their principal subdivisions, but nothing observed. The semilunar ganglion was small, violet externally, and pale internally, very firm, and cut with some difficulty. The superior cervical ganglion was of the ordinary size, grayish, paler internally than externally.

Respiratory organs.—*Epiglottis* and *larynx* normal. The upper part of the trachea was of yellowish-pink colour; the fleshy part covered with mucus, but the membrane of normal consistence.

The left *pleura* was healthy, excepting some partial adhesions at the inferior part of the lung. *Lungs*, the left was not heavy, the upper lobe bright red posteriorly from engorgement, the inferior lobe of a deeper red, with some points of manifest hepatization. The *right* lung was adherent in its whole extent, by bands of cellular substance which were readily broken; the upper lobe was lighter and less red than that of the left. The inferior lobe was slightly hepatized in some

points, and generally engorged, yielding upon cutting into it, an abundant red spumous liquid.

Circulatory system.—Heart was small, containing a moderate quantity of blood, with large and firm coagula. Pericardium perfectly healthy.

Digestive system.—*Œsophagus* healthy, *stomach* contracted superiorly, and without liquid, the parietes covered by a little grayish-green mucus. In the anterior and superior face of the pyloric half, the mucous membrane was thrown into a large number of grayish-red unequal folds—these folds are longitudinal, the membrane between them of the same colour, but not so deep. In the rest of the stomach a similar colour is disposed in longitudinal bands, a line or two large. The membrane is not mammillated, presenting the ordinary villi. The thickness and consistence are natural throughout, but the mucous membrane is every where injected in its substance. The sub-mucous tissue rather more injected than the membrane.

Small intestine a little tympanitic, externally grayish with scattered vascular ramifications. In the first three feet, there was only a greenish mucus, afterwards a more fluid matter of the same colour but only mixed with mucus; the colour of the mucus became reddish in the ileum. The colour of the membrane was pale in general, but in some parts slightly rose, due in part to vascular ramifications in its thickness, but much more to the injection of the sub-mucous tissue. The thickness and consistence are every where normal. Only two crypts of Brunner were visible, these were in the three last feet, and scarcely larger than a grain of millet. The glands of Peyer were generally little developed and grayish, some dotted with blue. The mesenteric glands were very prominent, a little enlarged, but of good consistence, gray or violet.

The *large intestine* was distended by gas in its first half, and contained much fecal matter, greenish, more consistent in the rectum than in the upper, and with the characteristic odour, but not moulded into the usual form. The mucous membrane was grayish, or slightly tinged by the matter in contact with it, but without any injection. The membrane was thin, but not wanting in consistence. The subjacent tissue but little injected.

The *liver* was of the usual size, rather pale, flabby, finely granulated, and more easily penetrated than in the natural state. The *gall-bladder* was at least doubled in size, and contained a yellowish, clear liquid, mixed with a yellow glairy, matter, which was detached with difficulty by washing. The internal membrane was of a deep livid red in about a third of its extent; yellowish-green in other parts;

the red portion was thicker than the rest, and presented larger areolæ, the membrane however is perfectly firm. The sub-cellular tissue is vividly injected. *Kidneys* of normal size, and deeper colour than usual, the calices and infundibula presented nothing remarkable. The bladder contained a transparent liquid, its membrane perfectly healthy. The uterus was enlarged, in consequence of the development of a fibrinous tumour in the posterior part of the neck, near the os tincæ, whose posterior edge is but a line in thickness, the orifice is open and the anterior edge a little thickened; the tumour is about two inches high, and twenty lines broad, opake, white and shining.

This case is one of the most interesting instances of death, in the period of reäction. On the morning of the 20th, she was rather better than on the preceding days, but still suffering from uneasiness at the epigastrium; after eating the pulp of an orange, the vomiting was reproduced, the gastric uneasiness much greater; these symptoms are sufficiently explained by the deep injection of the mucous membrane of the stomach, but as the inflammation was recent, (less than two days,) and not violent, the thickness and consistence were unchanged. The diarrhœa had ceased some days before her death, and the intestines were found in a state of perfect integrity, with healthy fecal matter. The lesions of the nervous system consisted in the distention of the lateral ventricles, and the slight injection of the pia mater and medullary substance, with the peculiar lilac tint, which was not confined to the brain, but existed frequently in most of the organs; the unknown modification of the blood which causes it, may perhaps be one of the most important lesions in the disease. The inflammation of the lungs was not suspected during life, this complication was found extremely frequent in the secondary stages of cholera, but in the severer cases auscultation was rarely practiced from the extreme feebleness of the patient, in the milder, where treatment could be directed with this special view, it was detected by the usual exploration of the chest.

Case XV. Salle St. Rosaire. Service of M. Andral. A woman named Viége, æt. 36, tailoress, living Rue Cloitre, St. Bernardin, twelfth arrondissement, was admitted to-day at 8 A. M. She has been ill since the 9th, when she was taken with violent diarrhœa at 10 P. M. Vomiting succeeded almost immediately, and has continued. Cramps came on an hour after the diarrhœa, commencing in the calves of legs, extending to the hands, and returning at intervals. The vomiting consisted of a watery liquid.

April 11th, 8 *A. M.* Present state. Features immoveable; great prostration; eyes dull, sunken, and encircled by a dark line; face,

including lips, livid and cold; arms and feet cold; body warm; tongue pale and cool; thirst tolerably great; vomits, whether she drinks or not; pain in the whole abdomen, but particularly at the epigastrium; says she urinated last night? aphonia complete, requiring the greatest attention to hear her whisper; extreme prostration; pulse one hundred and twenty, very small, but easily felt; respiration costal, twenty-eight. R. Sinapism to abdomen, sprinkled with ol. terebinth.; frictions with liniment of cantharides.

April 12th. Intense colics; hands cold; no vomiting; some stools; tongue covered by false membrane. Death at 2 P. M.

Autopsy, 13*th*, 8 *A. M.*—Great cadaveric rigidity; moderate embonpoint; hands violet; muscles pale red.

Cranium.—Moderate injection of the veins of the dura mater; medullary substance of the brain moderately injected; ℥j. of serosity in left lateral ventricle; half that quantity in the right; pineal gland of the size of a large pea, containing some sandy matter; rest of the brain normal; semilunar ganglion and its dependences white and healthy; par vagum also normal; larynx and pharynx healthy.

Thorax.—Pericardium contained an ounce of reddish serosity; heart contained in the right auricle a large, soft coagulum, entirely colourless and infiltrated with serum; in the other cavities there was a small quantity of liquid blood; another coagulum of similar appearance was found in the left auricle and in the beginning of the aorta; the tissue of the heart was firm, pale red, and hypertrophied in the left ventricle; the aorta contained a black liquid blood, in the midst of which appear some small white coagula; internal surface of the aorta white; in the summit of the left *lung* were some tuberculous masses, surrounded by a pale, crepitating tissue; posterior part moderately engorged; the right lung contained some tubercles in the summit of its inferior lobe; its parenchyma as in the left lung.

Abdomen.—Vena portarum contained but little blood; inferior vena cava gorged with blood. *Stomach* contracted, containing a small quantity of greenish mucus, which covered the internal face of the mucous membrane; that membrane is white, slightly dotted with red points; in the anterior parts, the membrane is of good consistence; some scattered albuminous flocculi on the peritoneal tunic of the intestines; sub-cellular tissue considerably injected; three inviginations of small intestines, each an inch long; yellow mucus with a yellowish matter is found in the first part of the small intestine; in the two inferior thirds it is of a pale red, with white clots floating in it; still lower, these filamentous clots are alone, and

cover the intestine with a membraniform layer; in the beginning of the jejunum, a large number of the valvulæ conniventes are of a bright red, between them, the membrane is rose-coloured, towards the end, however, the membrane in the intervals is pale; in many parts it is lined by whitish, membraniform fragments; this matter adheres intimately to the imperfect valves which occur in the ileum; no appearance of Brunner's follicles or the glands of Peyer.

Large intestine contained a fluid of a fawn colour, in large quantity; internal surface of cœcum and ascending colon of a brownish-red tint; this redness continues, but is less intense in the transverse colon; it then disappears, but is reproduced in the most intense degree from the descending colon to the rectum; membrane is covered by a puriform mucus, it is very soft, and yields a most fetid odour. *Liver* red internally and externally, of good consistence; gall-bladder distended by a deep black bile. *Spleen* five inches long, two broad, and one and a half high; livid red internally, and very firm. *Kidneys* normal. *Bladder* contracted, empty; no white matter in its cavity; uterus healthy; left ovarium dropsical, of the size of an orange; in the right ovarium was found some effused blood.

Case XVI. Hôpital de la Pitié. Salle St. Paul. Service of M. Louis. A boy named Verbois, aged fourteen, a slater, taken sick this morning, April 10th, was received at 4 P. M. His habits are temperate, and his alimentation has been sufficiently good. Yesterday being perfectly well, he worked as usual, and slept well through the night. Onset of the disease sudden at 7 o'clock this morning; after breakfast, consisting of some bread, meat, and a portion of absinthe, he experienced great nausea, followed by vomiting; this was repeated twice. The matter vomited, consisted of the food which he had taken. Diarrhœa ensued half an hour after vomiting; the dejections have been very numerous, he has not had either cramps or cephalalgia, or tingling in the ears: sight and hearing unaffected. Voice has been changed since the onset, and thirst has been intense during the day. Was chilly during the morning, but for the last two hours the chills have ceased.

5½ P. M. Present state. Face cool, forearm and legs cold. Colour of the face violet, with the prominent parts of the cheeks livid. Eyes natural. Abdomen, with exception of the epigastrium, soft and yielding; he suffers no pain, except a feeling of oppression across the middle of the chest, increasing upon inspiration. Tongue violet, hurried, clean—has some nausea, but no vomiting. Pulse is very

filiform and frequent. No cramps. Urine suppressed for some hours.

Treatment. Friction every half hour to extremities, especially lower limbs. Warm sinapism to legs and arms—¼ enema of linseed mucilage, with ℈j. of laudanum every three hours, and ℞. Antispasmodic potion, ℥iv.; alcohol, ℥ss.; laudanum, (Sydenham,) ℥ss. M. Take of this mixture ℥ss. every three hours. Diet.

April 11*th*, 8½ *A. M.*—Physiognomy natural, without lividity; heat of face natural, except the nose, which is cold. Voice very slightly altered. The heat of the surface of the body and limbs became equalized and reëstablished at 9 P. M. last night, after almost unremitted frictions for several hours. The antispasmodic potion was administered for the first time at 8 P. M. the first dose was vomited, the others were retained. The voice returned during the night; the vomiting and pain, or oppression of the chest ceased at 5 P. M. to-day. Urine is still suppressed. Diarrhœa is much diminished—momentary cramps in the hands, none in other parts. The extremities and whole body have a proper temperature. No pain in the abdomen or elsewhere; feels stronger. Expression of contentment and intelligence in the countenance; congratulates himself that his respiration is free and without pain. Pulse regular, small, (100.) Breath cool.

Treatment. Sol. syrup of gum.: ¼ enema of decoction of flaxseed, with ℈j. of laudanum every four hours. Frictions every four hours. Diet.

5 P. M. Countenance, temperature, and colour same as in the morning. Respiration slow, 12 per minute. Pulse 96; volume increased. Disposition to sleep, which is sufficiently tranquil. Urine has reäppeared.

Continue the medication.

April 12*th*, 10 *A. M.*—Has slept well; face and body of natural colour. Body of good temperature; face cool; some nausea; two dejections since yesterday. Abdomen soft, no pain on pressure. Expression of countenance good. Tongue slightly coated with white fur. Pulse 73, rather tense Respiration easy. Nausea.

Continue treatment.

5 P. M. Somnolency—has slept during the day; appearance of narcotism; has vomited soup which was given him by mistake. Face red and injected. Mind sluggish. Pulse 68.

Treatment. Ten leeches to the neck.

April 13*th*, 9 *A. M.*—Disposition to sleep continues. Face warm

and red. Pulse 104, tolerably full and strong. Tongue is natural except at the point which is slightly violet; no pain in the abdomen which is insensible to pressure. Has had three dejections since yesterday, of a yellowish-green colour, of a pungent metallic odour, and of the consistence of very thin "potage au purèe."

Treatment. Infusion of coffee, (coffee, ℥j. to water, ℥iv.) taken in spoonful doses each half hour: eight leeches to each side of the neck.

5 P. M. Has taken four portions of coffee—vomited after the two first portions, but retained two last: has had six dejections. Drowsiness less than this morning; the leeches drew a large quantity of blood. Face cool, redness much less; no cephalalgia. Tongue natural. Has desire for food. Pulse 112, weak, regular. Expression of face good. Allowed a small portion of milk.

April 14*th*, 9 *A. M.*—Says he feels as yesterday. Vomited during this night and this morning a clear, green liquid, containing numerous narrow, long flocculi. Has had three dejections similar to those of yesterday. Pulse 108, feeble. Heat of body and extremities normal; tongue very moist, violet. Thirst intense.

Treatment. Lemonade, ½ enema of decoction of linseed; sinapism to inferior extremities.

April 15*th*.—Feels better; vomited last evening a light greenish matter; has had eight dejections since. No pain of abdomen. Pulse rather feeble, 84, and regular. Liquid of dejection similar to that vomited.

Treatment. Seltzer water, solution of syrup of gum. Vermicelli and broth.

6 P. M. Asleep.

16*th*. Still doing well, vomited but once yesterday. Ate two rations of vermicelli and one of broth, without unpleasant consequences. Slept well. Appetite good; tongue nearly natural, slightly red. Abdomen well-formed, without tenderness—has had but one stool for last twenty-four hours. Temperature of body good.

Ordered Seltzer water—sol. syrup of gum—half portion of rice, one egg, and a small quantity of bread.

From this time the convalescence was rapid, and in a few days he was discharged perfectly well.

Case XVII. Salle St. Charles, No. 11. Service of M. Louis. Gignot Françoise, æt. 59, workwoman, living in the fifth arrondissement, married, entered 15th, at 11 A. M. She has had a continual cough for the last seven months, and three months since profuse hæmoptysis, (vomiting she terms it,) the blood was coagulated, and the

hæmorrhage twice renewed, and amounting each time to more than half a pint. Since the same date, she has expectorated much tenacious sputa, and has suffered from pains in the sides of the chest and between the shoulders. Frequent chills within the last three weeks.

On the 14*th*, at 2 P. M. she was taken with a chill and trembling, cramps in the legs which continued with nearly the same violence last night, at the same time violent diarrhœa and vomiting of a glairy matter mixed with bile. Cephalalgia and tinnitus aurium also at the beginning. She has kept her bed from the commencement of the attack. Intense thirst, but no coldness of the surface.

April 16*th*, 8¾ *A. M.*—Face a little violet upon the cheek-bones and nose. Face in general, but especially the nose, cool; hands cool. Folds of the skin are effaced as rapidly as in health. Pulse 92, rather small and regular. Tongue moist, natural temperature, a little coated at the centre. Thirst intense. Vomited twice since yesterday a glairy matter. Whole abdomen sensible, especially the epigastrium, which is even painful without pressure; the sensation is that of oppression mingled with lancinating pains, which extend to the back. Abdomen a little distended; frequent borborygmi, without discharges. Sputa greenish, not abundant. Percussion above and below the left clavicle; respiration frequent, at this moment cramps in the fingers and calves of the legs: ¼ enema with ʒss. laudanum, twice. Antispasmodic potion, with gr. iss. acet. morph. Frictions to the legs.

17*th*, 7½ *A. M.*—No nausea or vomiting, no cramps, except at intervals during the night, in the right arm. Urine. Folds of skin effaced with nearly the natural rapidity. Pulse 84, regular, a little feeble; temperature nearly natural.

Pectoral mixture. Gum water—¼ enema of flaxseed, with poppy capsules.

3½ P. M. One dejection after the enema. No cramps; slept since the visit. 2¼ rations of diluted broth.

19*th*. Entirely convalescent from the slight cholera: on auscultation, found a subcrepitant rhonchus on the left side, posteriorly in a spot where she suffers acute pain since last evening. No alteration in the sputa. Leeches to seat of pain. Solution of gum. Cataplasm to chest.

23*d*. The slight pain in her chest a few days since, was dissipated by the leeches. Constipation for three or four days. Appetite—face still a little bluish. Urine abundant and pale. Potion of violets edulcorated. Solution of gum, with syrup of poppies. 2½ rations of rice.

The patient was now in her usual state of health: this observation is reported as briefly as possible, to show the little influence cholera

has upon the progress of pulmonary phthisis, nor are patients with tubercles at all more exposed to the disease, and certainly not affected with greater severity than other individuals in perfect health.

Case XVIII. Salle St. Charles, No. 6. Service of M. Louis. Marie Nanzon, æt. fifty-three, seller of confectionary, (pedler,) widow, living in the 12th arrondissement, Rue d'Arras. Entered April 18th, 11 A. M. Food during the winter consisted only of potatoes, legumes, and boiled rice, with a little meat once a week, even this simple food was occasionally wanting. Eight days before her entrance, she was taken with diarrhœa, which ceased after four days continuance; her appetite was diminished, but she was not obliged to cease her work, during the succeeding days the discharges were regular and quotidian, but her appetite and strength were still a little impaired. On the 17th, at 9 P. M. she was taken with a sensation of dizziness, severe diarrhœa, perhaps twenty discharges in the same number of hours, and violent colics in the umbilical region. Cramps in the legs, and in a slighter degree in the arms, occurred at the same time, and have constantly continued and augmented in severity since the beginning, (she has umbilical hernia for many years.) She also states, that her health has been deranged in the winter, during the fogs, suffering from alternate constipation and diarrhœa, besides she has had a severe cold for the last month, with partial extinction of the voice.

18*th*, 5½ *P. M.*—Face a little blue, with the expression of suffering; nose cold, rest of face cool; arms and forearms cool and livid; eyes hollow, and sight a little troubled. Hearing perfect; folds in the skin of the neck are slowly effaced. Cephalalgia. Pulse 124, very small and feeble. Respiration 34, rather high. Aphonia complete. Cramps very severe, causing contortions. Tongue cool, blue at the edges, yellow and coated at the centre. Intense thirst. No pain remaining near the umbilicus, but the oppression at the epigastrium, which existed since the beginning of her indisposition, continues. Since her entrance she has vomited several simes a greenish matter at the bottom of which is a little mucus. Some dejections. Suppression of urine—¼ injection of flaxseed, with ʒj. laudanum. Iced lemonade. Frictions. Sinapisms.

19*th*, 8 *A. M.*—Eyes still hollow. Little lividity of the face, surface in general of *higher* temperature than in the normal state, colour of neck and arms as yesterday. Slept well as soon as the cramps had ceased after the repeated frictions. Sight better, but still a little obscure. Ringing in the right ear only. Continual

drowsiness existing from the 17th, but when dissipated, she speaks and moves with vivacity. Voice nearly natural. Cephalalgia. The cramps are less in the inferior extremities, but more severe in the hands, and still force cries from the patient; she suffers intense pain in the muscles of the right lumbar region. Pulse 100, small and feeble. Respiration still costal. Tongue coated, and white at the centre, a little red at the edges. Thirst, and desire for cool and sweet drinks; lemons are disagreeable to her when in health. Still a slight tenderness and feeling of soreness from the vomiting in the epigastric and umbilical regions, but not distinct pain. Vomited five or six times last evening a greenish, bitter liquid, and this morning some tisane which she had drunk. Nausea frequent. Alvine discharges dark green and liquid, almost incessant, and without the consciousness of the patient. Seltzer water with solution of syrup of gum. ¼ injection with ℈ij. laudanum, every two hours. Continue frictions.

4 P. M. The blue colour of the arms was in part due to a dye in which she had plunged them, and is removed by washing. Temperature more elevated. Intellect more lively. Sight improved; no tinnitus aurium. Cephalalgia not increased. No cramps, but a little numbness in the fingers. Pulse 100, with no particular character. Respiration 16, regular, not costal. Tongue dry and yellowish-red at the centre, whitish at edges. Thirst less than this morning. Vomited frequently, but only after drinking; feeling no nausea at other times; a flocculent green matter lies at the bottom of the liquid vomited. No dejection since the last injection, which was given an hour ago. Oppression without pain at the epigastrium. Venesection, ℥viij.; cataplasm to epigastrium; Seltzer water; discontinue injections.

20*th*, 7 *A. M.*—Expression of countenance more animated and natural than yesterday; felt better and less oppressed after the bleeding; slept tranquilly, but felt frequent flushes of heat; vomited twice before and after drinking, a greenish, bitter matter; two dejections, not copious; urine natural frequency; abdomen indolent; feeling of tension at the hypogastric region, which is less yielding to pressure; pulse 88, tolerably full; tongue whitish, moist, and very warm; folds of the skin of the neck slowly effaced; a little cephalalgia. Seltzer water with solution of syrup of gum; antispasmodic potion, with ℥j. syr. papav. alb.; two ¼ injections of flaxseed; two rations of diluted broth.

4 P. M. Heat elevated; expression of animation in countenance; feeling of weight in the head; drowsiness frequent; pulse 88, full and

regular; tongue brownish and dry at the centre, moist in other parts; thirst less; from time to time cramps in the hands; borborygmi, but no dejections; urine. Twelve leeches to neck; injection of flaxseed; discontinue potion.

21*st*, 7½ *A. M.*—Amelioration immediately after the application of the leeches; still a little frontal cephalalgia; no nausea, vomiting, nor dejections; intellect and senses perfect; borborygmi; urine scanty; copious perspiration; appetite and thirst natural. Seltzer water, sol. syr. gummi; two and a half portions of rice; two rations broth.

4 P. M. Feels better; countenance good; a little heaviness of the head; heat of skin a little elevated; a very slight sensation of cramp in the fingers; tongue nearly clean; no nausea nor dejections. Continue prescriptions.

22*d*. Improvement continues. Note not taken.

23*d*. Intellect perfect; tongue moist, but still a little yellow at the centre; appetite; one liquid discharge since yesterday; urine abundant; but the patient says more coloured than in health; pulse 84, character of it natural; no perspiration; some hiccough. Sol. syr. gum.; injection of flaxseed; two and a half rations soup.

24*th*. No cephalalgia; appetite; feels better; a little perspiration upon the chest; tongue moist; pulse 80. Sol. syr. gum.; enema of flaxseed; three rations soup.

25*th*. Convalescent. Three rations soup; an egg; a cup of milk; and a little bread. Recovery complete.

Case XIX. Hopital St. Louis. *Recovery by application of blister to the spine.* Method of M. Gerdy.—Adile Duquesnay, aged twenty-four years, of a nervous temperament, and of a constitution moderately robust, consulted M. Bergeon at the Hôpital Salpetrière April 14th, respecting a diarrhœa which had affected her for three days; but which was not accompanied with fever or colic, and which had not prevented her from attending to her usual occupations. M. B. advised rest in bed, diet, some simple mucilaginous drinks, immediately after returning to her lodgings, the diarrhœa became remarkably intense, accompanied by head-ache, a general trembling of the limbs, and an extraordinary feebleness; soon after, nausea was manifested, and the patient was seized with violent cramps. Thirty hours after this invasion of cholera, the following appearances were observed. Face pale; the features decomposed; countenance much changed; the nostrils contracted; eyes sunken in the orbit; encircled by a blue line; the surface of the abdomen and thorax cool; the extremities cold; pulse small and frequent, (95 to 100 per minute,)

cramps frequent and extremely violent, tongue pale, moist, but slightly violet in colour, as if the patient had drunk some red wine; thirst intense; nausea constant, but no vomiting; dejections resemble water in which rice has been boiled, and which contains portions of the flocculent grains; pain at epigastrium; feeling of apprehension over the chest; voice very feeble; respiration short and frequent; urinary secretion entirely arrested. In conveying the patient from the chamber to a carriage, syncope occurred three times; upon her arrival at the Hopital St. Louis, M. Bergeon applied two large blisters on the vertebral column; one between the shoulders, the other to the small of the back, an infusion of melisse was given for drink, and a portion with syrup of ether and half grain of opium; sinapisms were applied to the feet. The night was very disturbed, but the menses were manifested very abundantly, and the next morning the nausea had ceased, the cramps were a little less violent, and the diarrhœa less intense.

The second day after the entrance into the hospital, the diarrhœa scarcely existed; the cramps almost entirely dissipated; the heat of surface entirely reëstablished; the pulse strong; the voice recovered; and desire for food. On the third day, no cramps; no diarrhœa; scarcely any fever; voice sonorous; but there still exists great weakness; but the patient was resolved upon quitting the hospital, and that privilege was granted the next day. She has been visited since, and the convalescence is entirely established.

Case XX. Hospital Neckar. Salle St. Susanne. Service of M. Bricheteau. Duval, a seamstress, aged forty-one years; tolerably robust. Taken ill on the 13th April, and entered the hospital the same day. She has had diarrhœa for the last six or seven days, the discharges becoming more frequent and thinner each day. This morning about 5 o'clock, she was affected at the same time with vomiting and abundant stools, then with cramps, beginning in the toes, and afterwards extending up the legs. Pains in the epigastrium, with the sensation of twisting for six days; and colics during the last two. No tenesmus; no chills; dizziness since yesterday, and ringing in the ears, which prevent her from hearing, whether she speaks in a loud or low tone. No urine since this morning.

April 13th, 11 *A. M.*—Face cold, contracted, blue especially around the mouth. Eyes hollow and encircled, pupils natural; extremities cold and livid. Voice feeble, hoarse and changed. A little cephalalgia. Pulse very feeble, 100. Tongue rather cool and whitish. Epigastrium scarcely tender; pain of the right side in the region of

the liver. She has diarrhœa, vomiting and thirst; prefers hot drinks.

Frictions, hot bottles to the feet. Hot chamomile tea. Potion of peppermint, alcohol and sulphuric ether every two hours. Injection of twelve drops of laudanum.

7 P. M. Face a little red, the pulse has risen, hands and feet warm, abdomen tender, no dejection since the enema; vomiting and cramps from time to time, but less. No urine.

14*th*, 8 *A. M.*—Sensation of heaviness in the head. Eyes slightly injected. Pulse eighty-five, strong. No cramps since last evening. Thirst less. No urine.

15*th*, 8 *A. M.*—Diarrhœa much less. No vomiting since the evening. No cramps. Urine suppressed. Some dizziness and disposition to sleep. Epigastrium not tender. Pulse 70, less excited. Tongue a little red, moist, covered with a mucous coating. Thirst diminished, but still considerable. No pain in the abdomen.

Infusion of chamomile. Infus. orange flowers. Injection of twelve drops laudanum. Anti-emetic potion.

Infusions of chamomile, and of orange flowers. Enema, gtt. xij. laudanum.

April 16*th*.—Slept well. No vomiting. The cramps which returned yesterday, yielded entirely to frictions. Return of diarrhœa at six this morning. Stools not attended with pain. Urinated last evening. Thirst increased. Tinnitus aurium yesterday, none this morning. The menses, which were arrested at the beginning of the disease returned last evening. Pulse good. Skin natural. A little appetite. Whitish coat of the tongue is diminished. Epigastrium still a little sensible. Some pain at the extremity of the last rib on the right side.

Infusion of chamomile with nitre. Potion of gum with nitre. Enema of laudanum gtt. xij.

17*th*. Morning.—Vomited this morning a greenish matter, the diarrhœa continues. Abdomen not more painful. Menses continue, but in small quantity.

7 P. M. About ten this morning, she discharged a yellow matter without pain, the diarrhœa has ceased since that time. She feels better. Urine copious. No pain. A little feeble. Appetite tolerably good. Face and voice nearly natural, as well as the tongue and skin. No cramps since the day before yesterday. Took to-day a potion of sulphuric ether, and orange flower water, much relieved by it. But still thirst.

Soup and gruel.

18*th.* Slept well. No pain, vomiting, cramps, nor dejections. Urine abundant. Pulse a little excited. Skin warm.

Lemonade. Broth.

19*th.* Improving. Lemonade and broth.

20*th.* Same condition, except slight rheumatic pains in the sides.

Lemonade. ⅓ of ration of food.

22*d.* Discharged well.

Case furnished by our friend Dr. Smith, of North Carolina.

Case XXI. Hopital Neckar, Salle St. Louis. No. 19.—Madame Coquet, marchande du quatre saisons, of middle stature and embonpoint, robust, enjoys commonly good health, aged twenty-six years; has been married seven years, had three children and one abortion, viz. of her second pregnancy, is now four months gone in her fifth pregnancy. Entered the hospital the 10th April, about 3 o'clock, P. M. She has undergone great fatigue and slept little for some days past, on account of the sickness of her daughter. Fatigue excepted, was in good health yesterday; ate for supper some boiled meat and sallad; during the night slight general indisposition; ate this morning without much appetite a little meat soup.

About 10 A. M. without previous pain or symptom, except the slight general indisposition, she was seized at the same moment with violent vomitings and purging without colics; she became cold; cramps supervened in the course of two or three hours, occupying successively the feet, calves of the legs, thighs, hands and arms. On entering the hospital about 3 P. M. she presents the following state. Face shrunk, icy, almost black, triangular. Eyes hollow, sunk, surrounded with a deep, livid circle. Tongue cold, moist, livid, with a whitish fur. Voice almost extinct; she whispers, or on exertion her voice is raucous. Speaking fatigues her much. Extremities cold, numb, and livid or marbled. Pulse imperceptible. Suppression of urine. Thirst is torturing; she likes indifferently cold or warm beverage. Cramps, vomiting and purging with short intervals. No pain from the purging. She lies on her back and dislikes to be disturbed. Bottle of warm water to feet, frictions of the limbs, sinapisms to the calves of the legs, a current of warm air by means of a portable chimney, was conveyed under the bed-clothes, and every two, three, or four hours a desert-spoonful of the following potion. ℞. Syrup cort. aurant. ℥i.; vin. Malaga, ℥i.; aq. Menth. ℥i.; aq. Tiliæ europæa, ℥i.; ether sulfuric, ℈j.; laud. (Rosseau,) ℈j.—M.

April 11. She presents to-day the same state, except that the symptoms are less urgent. She took to-day thirty-six grains of ipecac. without any apparent effect. For beverage to-day, lemonade; potion every four or five hours.

April 12. The same symptoms are present as before, but less urgent; temperature nearly natural. Infusion of chamomile. Potion.

April 13. This morning slightly comatose, much disposed to sleep. Eyes injected. Vomiting and purging continue, but are less urgent. Six leeches were applied behind each ear, which have abated the coma in a considerable measure. Pulse is perceptible, very weak. No cramps to-day. General weakness very great. Respiration a little constrained. Prescription of the morning, leeches, sinapisms to calves of the legs, tisan. Potion.

April 14. Comatose, face red, eyes very injected, light-headed during the night, pulse feeble, surface warm; purging and vomiting much diminished; blister to the calf of one leg, a bladder of ice to the head, thirty-six grains of ipecac. at two doses. I confess I could not see any other indication than that ipecac. has been ridiculously vaunted as a specific. However, the ice relieved her head notably, it was continued two hours. The stomach was in the same state after throwing off the ipecac. as before. She aborted—a dead child about 5 P. M. Potion, tisan.

April 15. Slightly disposed to sleep. Face rather red. Pulse active—eighty-five. Urinated a considerable quantity this morning for the first time since the commencement of the disease. Vomited this morning a yellow viscid matter. Tongue red and dry. Thirst much less urgent. Purging is very slight. Tisan of Tilleul with orange flower water. Potion two times in the twenty-four hours.

April 16. Vomiting and diarrhœa ceased. One passage since yesterday morning. No cramps. Urinates freely. Tongue moist, clean. Pulse pretty good. Surface of the natural temperature. Intellect clear. Tisan with chamomile and orange-leaves water; enema with ten drops of Rousseau's laudanum.

April 17. Four stools since yesterday, with efforts to vomit. Pulse a little excited. Slept pretty well. Urinates freely. No cramps. Gradually improving. Gum Arabic; enema with ten drops of Rousseau's laudanum.

April 18. Somewhat disposed to sleep. Ineffectual efforts to vomit. Epigastrium not sensible. Pulse a little excited. Tongue red, smooth, moist, a little swollen. Eyes slightly injected. One stool since yesterday. Bled a little at the nose from efforts in coughing. Gum Arabic.

April 19. Slept well. Tongue slightly red, moist. Eyes no longer injected. Face less flushed. Vomited and purged a great quantity of bile. Pulse good, a little appetite. Tisan of Tilleul and of orange leaves; enema with laudanum and rhatany.

April 20. General state favourable. Same tisan—one soup.

April 21. Complains only of a slight cough and general weakness. No pain. Tisan of Tilleul and one-quarter ration of food.

April 22 *and* 23. Same state—same prescriptions.

April 24.—To-day about 8 A. M. and again at noon, she had fits of violent shaking, about an hour each. She took nothing, and felt as usual after they were past. Prescription of the morning, Tilleul, gum Arabic, one-eighth ration of food.

April 25.—She slept well. About 9 A. M. a slight shivering, which was followed by head-ache and fever. She urinates, and has her passages now in the usual manner. Same prescription.

About 7 P. M. after an icy sensation of a moment's duration, occupying the whole body, she shook violently without pain. This shaking was cut short immediately by the application of ligatures to the arm and thigh, so as to arrest completely the circulation in the limbs.

April 26. Slept but little, but suffered no pain. Is gradually improving on the whole. Inf. chamomile; gum Arabic; soup, one-eighth ration of food.

April 27, 28, 29, 30.—Continues to improve. All the functions are gradually resuming their state of health. No shaking since the application of the ligature.

May 1.—Discharged cured.

The external means for keeping up the heat were employed till the reäction was fully developed. This took place very slowly, and was not complete before the 14th of April. The intervals between the times of taking the potion were gradually increased. The potion was entirely discontinued the 16th of April. The reäppearance of urine was coïncident with a noticeable improvement, particularly in the circulation. The pulse before small and very feeble, became free and full. During the reäction, after it was fully developed, even to decided convalescence, little more was necessary to be done than to moderate the determination of blood to the head, once by leeches, the second time by ice, and derivatives to the legs. The relief afforded by the ice to the head was more decided than by the leeches; and also to check the diarrhœa by opiate injections. After the abortion, the lochial discharge in moderate quantity continued till her complete restoration to health. How far this discharge, operating as a derivative, contributed to her recovery, would afford mat-

ter of study, had we other facts of the same kind in sufficient number. I can discover nothing like periods in her disease; reäction came on very slowly, which very gradually changed into convalescence without any crisis. She had a slight cough for three or four days during convalescence. The ipecacuanha seemed to produce no effect whatever. She was doubtless much indebted for her recovery to the extremely vigorous constitution which she possessed. It is the most severe case I have seen followed by a recovery.

Communicated by Ashbel Smith, M. D. of Salisbury, North Carolina.

Case XXII. Hôtel-Dieu, treated by M. Magendie.—Lemoine, forty-six years of age, lace-maker, living in Rue des Lavandiers, No. 3, came into the Salle St. Monique, at Hôtel-Dieu, on the 5th of April. She says she has had frequent and liquid stools for four days. These stools were not preceded by colics. The day after the first appearance of them, (the third day before the entrance of the patient into the hospital,) she vomited. The vomiting continued all day, and at night she was taken with cramps in the legs. She remained in this state until the 5th of April, without taking any thing to relieve the vomiting or diarrhœa except some brandy.

On the 5th of April, when the patient entered the hospital, the following symptoms were observed. Skin generally cold; face and extremities of a bluish colour and extremely cold; cramps in the legs; pulse insensible; even the pulsations of brachial artery were not sensible to the touch; the voice was like that of a young child; there was great pain in umbilical region; continued vomiting of a greenish fluid matter, and diarrhœa which resembled urine. The patient has not urinated since yesterday.

M. Magendie ordered the following treatment.

The patient is to be put in a warm bed and to be rubbed with equal parts of ammonia and spirit of camphor. Immediately after the frictions the patient is to be surrounded with sacks of hot sand, and to drink as often as possible of hot punch made with tea four pints; four lemons; alcool, 1 pint; sugar, 1 pound.

April 6th.—The skin is warmer than it was yesterday. The diarrhœa has ceased. The vomiting still continues. The pulse is sensible but feeble. The extremities are still of a bluish colour, but not so cold as they were yesterday. The cramps in the legs have ceased. The patient has not yet urinated.

M. Magendie ordered hot wine to be given in the place of punch,

because the patient does not like this latter drink. The frictions and sacks of hot sand are be discontinued.

April 7th.—The patient has urinated to-day for the first time since her entrance into the hospital. The other symptoms are the same as they were yesterday. The same prescription (hot wine,) to be continued.

April 8th.—The vomiting has ceased. The skin is of its natural warmth. The pulse is natural. No vomiting nor diarrhœa. The urine is natural. M. Magendie pronounced the patient convalescent, and ordered her chamomile tea and soup twice a day.

April 9th.—The patient is in the same state as she was on the 8th. Prescription, morning and evening.

April 10th.—The patient is able to get up and walk about the ward. Her drink is changed for wine and water. A mutton chop is added to her chamomile tea, soup.

April 11th.—She is in the same state. Prescription the same.

On the 12th of April, the patient left the hospital, and on the 24th of April, I visited her at her lodgings and found her in good health. She says since she left the hospital she has been as well as she was before she was taken with the cholera.

Communicated by Thomas L. Ogier, M. D. of South Carolina.

Case XXIII. Treatment of M. Rostan. Ferdinand Mendilly, (Italian,) æt. twenty-four, cage-maker, living Rue Avalle 8th arrondissement. His habits are temperate, alimentation sufficiently good; his lodgings well-aired and comfortable, his general health good.

Without having committed any excess, Mendilly was attacked on the morning of April 16th, by slight colics, but not feeling otherwise indisposed did not discontinue his usual work. On the morning of the 17th, the colics became much more violent, accompanied by copious alvine discharges, which at first had some consistence, and were of a yellow-green colour. These were repeated at least twenty times during the morning; each succeeding dejection becoming more and more liquid and less coloured, until, (according to the patient,) they were exactly similar to a weak decoction of rice, in which are a number of flocculi. Violent cramps came on soon after the increase of the diarrhœa, and were excruciating in the upper and lower extremities. The patient was admitted into the temporary hospital, of the "Grenier d'Abondane" at 1 P. M. the 17th. On the morning of the 18th, he presented the following symptoms. Tongue rather dry, rose-coloured on the borders, white in the centre, without any

mucous coating; thirst intense. Vomiting in the night after he had drank an aromatic infusion. Pain of the chest, and of the left lumbar region; colics less intense than yesterday; oppression very great; voice extinct; pulse small, frequent, but easily counted, 98 per minute. The cramps, which yesterday were so violent, have diminished in intensity since the patient has been placed in a hot bath of 104° Fahr. where he remained three-fourths of an hour. He has had some sleep during the night, but it was often interrupted and agitated. The eyes are deeply excavated, and sunken in the orbits, the conjunctiva is injected; the face of a deep leaden colour and cold, nose cold, the hands and feet lightly violet, and partake of the general coldness of the body, but are warmer than on the preceding evening. The urinary secretion entirely suspended. Through the day the patient has taken every hour a tea-spoonful of the following potion. ℞. infusion of tilleul, (lime-tree) ℥iv.; strychnine, gr. j.; syrup of orange flowers, ʒij.; syrup simp. ℥iss.—M.

The warm bath was rëadministered on the 19th; the drink of the patient was an infusion of tea with sugar; an injection of mucilage of gum arabic, ʒj. with fifteen drops of laudanum was administered. Under the influence of this treatment, the favourable change manifested on the 18th, was much increased on the 19th. The cramps and diarrhœa ceased, the pulse regained its force; the oppression was dissipated; the eyes are more natural; the violet colour diminished, and the patient had a calm and refreshing sleep.

On the 20th of April, appetite returned, but absolute diet was still enjoined. The urinary secretion was in part rëestablished.

21*st*. Countenance, expression, and colour natural; secretions reestablished; no remains of the disease other than feebleness; he was allowed light broths. On the 22d, food increased, patient in entire convalescence.

Symptoms.—In all, or nearly all the cases we have observed, diarrhœa commenced before the other symptoms; sometimes, but rarely, it was preceded or accompanied by chills; generally it began suddenly without premonitory signs other than flatulence and borborygmi. These symptoms cannot be regarded as peculiar to cholera, or as forming a part of the disease, since the majority of the inhabitants of Paris probably suffered from this modification of the epidemic influence. The diarrhœa was usually at first moderate, from two to ten liquid stools in twenty-four hours, but when the disease assumed a graver form, the dejections suddenly became extremely frequent, and

sometimes were almost incessant, with severe colics, which were relieved for a moment after each discharge. The colour of the dejections was various, but generally, at first, green or yellowish. The disease was regarded as commenced as soon as this exacerbation of the diarrhœa took place, and now speedily assumed its characteristic symptoms. The head-ache, vertigo, anorexia, and slight uneasiness which accompanied the commencing diarrhœa, were replaced by intense thirst, uneasiness at the epigastrium, vomiting and cramps; these symptoms closely followed the aggravated diarrhœa. The dejections are now composed of whitish albuminous matter, with parcels of mucus interspersed, like boiled rice, but sometimes the greenish or yellow colour is unchanged, at other times the stools are of a deep chocolate colour. The matter vomited consists at first of the ordinary ingesta, subsequently of bile followed by a whitish liquid like that of the dejections, and intermixed with mucus, or else white and glairy; at the beginning of the disease we often observed this last-described liquid thrown up nearly without effort, and sometimes almost streaming from the mouths of the patients. The abdomen is sometimes free from any pain; more frequently there are colicy pains of the intestines and a deep-seated constriction at the epigastrium, which the patients compare to the feeling produced by strong pressure; the pain at the epigastrium is not always increased by compression, and in some instances is even relieved. Cramps occur simultaneously with the vomiting or soon after it; they commence in the calves of the legs and feet, then extend upwards along the thighs, and are sometimes felt in the abdomen and along the spine. The upper extremities are nearly as often affected with cramps as the lower, but at a later period and in a less violent degree; in a woman at the Hôtel-Dieu we observed a strong trismus of the jaw, and generally the contraction of the muscular fibres during the cramps may be distinctly seen beneath the skin. The intellectual faculties are perfect, but a little duller than in health. The senses are frequently affected, but generally only for a short period. The voice is enfeebled, disguised, or nearly lost. The countenance expresses great anxiety; the eyes are much sunken and the cheeks depressed; the face, extremities, and frequently the chest are of a blue or violet colour; in the face this colour is especially marked around the eyes and in the lips. Sometimes this colour is so deep that it approaches a black, but only in cases of extraordinary severity. The surface is cold, especially the nose, the skin upon the prominences of the cheek, the hands and feet, but the patient most frequently is ignorant of their coldness, or even fancies that they are unnaturally warm; at other times, but rarely, he expe-

riences the sensation of cold. The skin of the extremities is singularly wrinkled, resembling the hands of a washerwoman, but thrown into more longitudinal wrinkles; if folds be made in the skin of the neck or other parts which are not very tense, by pressing it between the fingers, they remain a long time without disappearing. The whole surface resembles that of a dead body, but with this remarkable difference, that the temperature during life seemed much cooler to the hand than some hours after death; we had frequent occasion to verify this fact at La Pitié. The pulse at the commencement of the disease is scarcely affected, but with the progress of the cold stage sinks, and in severe cases ceases entirely in the radial artery; the pulsations of the heart require the application of the ear with great attention to be counted. This torpor of the circulation was like the other symptoms just mentioned, most frequently observed at the beginning of the epidemic, and often continued after the heat had returned to the extremities. The respiration is very costal, and usually, although not always, frequent, and almost invariably attended with great oppression, which forces the patient to change his posture frequently and lie with the hands out of bed. The urine is much diminished, or more frequently totally suppressed as soon as the grave symptoms appear, before the cold stage is completely formed, and does not return until the amelioration of the general symptoms, even if the diarrhœa and vomiting should cease. These symptoms of the second or cold stage do not necessarily all exist, nor is the order of their succession, although regular, rigorously established; but in tracing a picture of the fully developed form, it is easy to imagine the less perfect or milder types. Before death, the vomiting, cramps, and diarrhœa sometimes all cease; the patient falls into a state of partial stupor from which he is easily roused; the lividity and coldness augments, he generally lies on his back, the head thrown backwards, and eyes nearly closed and covered with mucus; stertorous breathing and sometimes cold perspirations precede the moment of death.

When reäction comes on, the warmth is restored to the extremities, but the more forcible action of the heart should be regarded as a much better evidence of the safety of the patient than merely the condition of the cutaneous surface. The voice becomes stronger, the vomiting and diarrhœa either cease or are greatly diminished; the cramps are less intense, but do not entirely subside as soon as the other symptoms; the urine becomes copious and natural. This period is scarcely less dangerous than the second or cold stage, and if the greater number of victims perish during the period of prostration at

the commencement of the epidemic, the consecutive diseases are more destructive when the disease bursts forth with less violence. Congestions of the brain, as indicated by the flushed face, stertorous respiration at times, and stupor should be carefully observed; nor is the unusual brightness of the eye and sudden vivacity of intellect to be regarded with much less apprehension. The cadaveric lesions of the brain in cholera are as little constant as in other diseases, but the changes observed after death were still sufficient to confirm the obvious symptomatic derangement. Pneumonia occurred frequently, not only in the cases upon which our analysis is based, but in a still larger number of mild choleras, it was detected and arrested by an appropriate treatment; the diagnosis must be based rather upon the appearance of the sputa and the examination of the physical signs, than the state of the pulse or respiration. The digestive organs offer symptoms of a new character; the tongue is coated, warm, red at the edges, the epigastrium and abdomen painful upon pressure, and the seat of a more constant, severe pain, than that produced by the colics. The intestinal canal becomes the seat of an unequivocal inflammation, the more severe from the great functional disturbance it had suffered, a cause of disease which is added to the disorder of the circulation and extreme feebleness that favour the inflammatory action in the whole system. If these symptoms are mild, the convalescence is prompt; patients who had been extremely prostrated, in a few days recovered their usual health; if the secondary inflammations are violent, the convalescence is longer and liable to interruptions or even relapses; but in no case should we forget the extreme danger of the disease, or allow a patient to return to his usual habits, until strength be perfectly reëstablished; not a few of those discharged as cured from the hospitals of Paris, were really perishing from a return of the cholera, or from one of its attendant diseases.

Treatment.—The subject which we approach with the greatest reluctance, from the extreme difficulty which it offers, is that of the treatment; this difficulty depends upon the little power which our remedial agents possess of opposing this disease, and still more the necessity of constantly varying the means employed, and the degree of activity in their use, according to the diversified stages which cholera presents. In the diarrhœa, which may either be a precursor of cholera, or merely a slighter action of the morbid cause, the treatment should only differ in energy from that employed in ordinary seasons against a similar affection. In the mildest form there is no nausea or ex-

citement of the pulse, or pain in the abdomen; the only inconvenience experienced is the borborygmi and the liquid discharges; here the abstinence from food should be immediate, or the diet limited to light broths; this diet alone, or with a moderate dose of opium, will generally arrest the symptoms. The same diarrhœa assuming a severe form, has received the appellation of cholerine at Paris; the dejections are more frequent, and often attended with pain; the pulse usually a little excited, with general feeling of uneasiness or vertigo. The diet should be as rigid as in the last mentioned instance, but the febrile excitement should be reduced by bleeding, and leeches if any local pain exist; to these depletory means a warm bath may be added, provided a bath can be placed close to the bedside of the patient, and be given without the slightest , the bath is usually followed by profuse perspiration, and with salutary effects, as the authors can attest from their personal experience. Should the discharges be still abundant, they should be checked with opium, and if the mercurials possess any efficacy in changing the course of cholera, theoretically we should advise their administration at this point, practically we know nothing of their action in this epidemic. External stimulants, as sinapisms, must be used at the discretion of the practitioner, the ordinary rules for their application directing his prescriptions. The symptoms combated by these means do not yet constitute the cholera, they are but the prodromus, but the most useful and interesting moment for the practitioner is that of anticipation and prevention rather than cure. After the diarrhœa has continued for some time, the commencement of the formed cholera is announced by the vomiting and cramps, which are not at first attended by the alteration of the voice, or the blueness and coldness of surface. The symptoms are now the most urgent, and require the most vigorous treatment, blood-letting is adviseable if the pulse be not *much* depressed, and should be carried as far as the strength of the patient permit it, the effect of it in the cases with which we are familiar was happy; unfortunately our number is necessarily limited, for the patient in hospitals are rarely seen at the most favourable moment for treatment. Use should be made of the *hot*, (not the warm,) bath, at 104° Fahr. as practised by M. Rostan, and external stimulants; should *no* pain at the epigastrium exist, other than the colics, which are diminished by pressure, an emetic of ipecacuanha may be administered with great advantage. M. Andral was much pleased with its administration at La Pitié, and we know that during the existence of the cholera at Vienna, the treatment by ipeca-

cuanha was regarded as the most effectual. It may generally be given without fear for the most careful examinations have proved that the inflammatory appearance of the stomach was more frequently found at the termination than during the most violent period of the disease, and at the beginning, our object is to change by a sudden impression the derangement not of one but of the whole systems of organs. The cramps are most readily relieved by smart frictions, which are more effectual than compression by tourniquets as tried at one of the hospitals; the frictions should be kept up with perseverance until the patient is relieved. Should the blue cold stage come on in spite of the most vigorous treatment, we must not think of pursuing further the depletion; it was imagined that the profound prostration was due to the congestion of the internal organs which impeded the action of the whole machine, but the attempts at blood-letting, which could only be performed with the aid of hot applications to the arms, caused a temporary flutter of the pulse, followed by a more rapid extinction of life. The treatment is the most simple possible, for it is not with the intention of curing the disease itself, but of preserving life, that we must stimulate; frictions with warm liniments should be almost incessant, and made from the extremities towards the central organs; sinapisms to the extremities; and particularly a liniment of ammonia and turpentine, which is applied along the spine by flannels impregnated with it, a hot smoothing-iron is then to be passed rapidly along its whole length. This application was employed by M. Petit of the Hôtel-Dieu, and with great advantage. Dry heat is preferable to moist, hence resort is had to sand-bags, hot cloths, or still better, to the introduction of heated air beneath the bed-clothes by a tube communicating with a small furnace.

The question of internal stimulants has been much discussed, we regard them as improper in themselves, but sometimes their employment becomes necessary, but only for the immediate necessity of preserving life, and as soon as a moderate degree of reäction is produced, they should be discontinued. The diarrhœa in the cold stage, and that immediately preceding it, should be combated by opiate injections, alone, or with a preparation of rhatania; but if these injections succeed in their effect and are not discharged, their influence if continued is injurious, and tends to aid in producing the internal congestions to which the patient is exposed by his extreme feebleness. The vomiting is best allayed by Seltzer water given simply, or with a mucilaginous syrup, or if not extremely disagreeable to the patient, ice in substance, or iced water in very small portions.

But little else can be done during the cold stage, which is not one in which the powers of medicine are very efficient; when fairly formed it is usually fatal, and the mortality of the most destructive period of the epidemic arose from the deep prostration of the individuals, who were struck with the full violence of the disease, almost without the precursors usually observed. Every variety of stimulant treatment was employed in vain, and those who witnessed the terrific aspect of the cholera at its first appearance, were not surprised to learn that of the first one hundred cases admitted into the Hôtel-Dieu, ninety-seven of which were cholera, ninety-six died, leaving but one solitary case of the disease cured. Yet this was not from the treatment of a solitary physician, but the results of the practice of all of the physicians and surgeons, who divided the patients in the ward. This bad success was not peculiar to the Hôtel-Dieu; at La Pitié, La Charité, Neckar, and even at the Val-de-Grace with healthy, robust soldiers, the results were about equally bad. The professor who has attracted so much attention, as the author of the physiological system, stated, that he had lost but about one in six patients in the most unfavourable period, unfortunately his own official reports proved the strange delusion, with which he flattered himself. The difficulty of deciding as to the merits of any treatment in cholera, is evident, from the unfavourable results at the beginning of most of the epidemics, but especially that at Paris, and the happy termination of most of the cases which have occurred within the last fortnight, (May 5th.) The period of reäction is one of great risk, at first nearly all the patients died during the cold stage, but after the epidemic had continued a certain time, a large number passed safely through this period, and perished during a fancied convalescence. The therapeutics must be based upon the strong tendency to local inflammations or congestions, which must be watched with the utmost care, as a slight lesion of an organ, will produce the most fatal effects upon the enfeebled victims of cholera. Opium should be discontinued or given moderately and *cautiously*, if the head becomes hot with cephalalgia, brightness of the eyes, ice should immediately be applied over the whole scalp, and blood be drawn especially by leeches. Should the respiration be a little impeded, the chest must be explored, and if a little crepitus exist in any part, leeches should be applied to it, if the patient's feebleness forbids venesection. The abdominal viscera should be carefully examined, for if the autopsies have taught us that the lesions observed in the cases which terminated with the greatest rapidity, were few and not constant, we have also seen that the most severe inflam-

mations very often occur in the intestinal canal; the abdomen should be carefully pressed, and even if no tenderness exist, should the thirst and heat of skin be great, local depletion and antiphlogistics are requisite, the small and large intestines are not exempt from these inflammations, and equally demand an analogous treatment. The physicians at Paris were desirous of testing the merits of many of the heroic remedies, but they quickly discovered that the violence of an epidemic, forms no exception to the general rules of treatment, and returned to a more rational employment of the ordinary means, rather than a fruitless search for boasted specifics.

In concluding our brief history of cholera, we may state that not only have the physicians of the three largest hospitals at Paris, declared their disbelief of the existence of contagion, but that from our own observation, the physicians and pupils who passed the greater part of the day in the wards and dissecting rooms, were at least as exempt from cholera as any other classes of the population. In our personal acquaintance, not an individual was attacked with severe disease. The facts observed at Paris, add only another proof to the absurdity of quarantine regulations, at least with respect to epidemics of this character. We need not insist upon the diagnosis of spasmodic cholera, the vomiting, purging, *suppression of urine and cramps*, will characterize it even before the complete formation of the cold stage. The prognosis is simple, but depends chiefly upon the violence of the blue stage, the age of the patient and the disposition to secondary congestions or inflammations; at the commencement of an epidemic it is generally unfavourable, towards the close, on the contrary, the cases are milder and the chance of recovery is nearly as great as in other severe diseases.

Paris, May 5th, 1832.

ART. IV. *Case of Retained Placenta.* By F. Y. PORCHER, M. D. of Charleston, South Carolina.

MRS. ——, the subject of the following communication, was about thirty-three years of age, tall, and of spare habit of body, had always enjoyed good health—been married about two years—been twice pregnant, and had an abortion each time in the third month: in the third pregnancy I was consulted occasionally for slight indispositions, and requested to attend on her in her approaching confinement. In the morning of the 14th of February, 1831, she fancied that her labour had commenced, and I was requested to see her. On my arrival, I found that there had been some discharge of water, but not the slightest pain; she was directed to keep her bed, and inform me if any pain should come on during the day. In the evening some pain was felt, which continued through the night, though slight, and at long intervals.

15*th.* Pain much increased, and the os uteri beginning to dilate—in a few hours sufficiently open to ascertain that it was a breech presentation. At 4 o'clock that afternoon she was delivered of a full-sized child. On applying the hand to the lower part of the abdomen, the uterus was found low down and well contracted. After waiting some time, an examination was made, and an hour-glass contraction of the uterus was found to exist. The spasmodic action was of so firm a nature as to render the introduction of but one finger exceedingly difficult, and could only be accomplished by persevering efforts: on overcoming the spasm so far as to reach the fundus of the uterus, the placenta was found entirely adherent, and so intimately connected that its edge could not be traced, and no part detached by the finger. During this examination, the tonic contraction of the uterus maintained a constant and powerful action on the hand, such as none but those who have experienced the effect of uterine contraction can estimate.

After making fruitless efforts to extract the placenta, it was deemed adviseable to desist for the time. Reflecting on the case, it appeared to have some peculiarities, and to present difficulties not easily overcome by the practitioner, or managed with safety to the patient. On passing the finger, for instance, along the cord to its insertion into the placenta, the ordinary spongy and thick mass appeared to be wanting, and to be inserted directly into the uterus; on extending the fingers around, it appeared doubtful when they passed

over the margin of the placenta; the uterine contractions were exceedingly strong, but did not in the least effect its attachment.

About 10 o'clock at night, six hours after delivery, I requested my friend, Dr. Joseph Glover, to see her with me. The nature of the case was stated, and he was requested to make an examination himself. He found the tonic contraction strong, and the placenta still adherent. The most judicious efforts on his part could not effect the slightest detachment, and it was determined to desist for the night, and prescribe an anodyne.

16*th*. On visiting the patient this morning found her comfortable; had rested well during the night, and continued free from pain; the state of uterine contraction in no respect altered; the placenta could be more distinctly felt at its centre. Particular engagements obliging Dr. Glover to leave the city, Dr. Philip G. Prioleau was requested to see the patient with me. His efforts to extract the placenta were conducted with his usual skill and address, but with no better success. These repeated examinations and attempts at extracting the placenta had been conducted with as much gentleness as possible, but at the same time with resolution and perseverance; nothing, however, had been effected. It became necessary at this time to pause, and reflect on the peculiar nature of the case; the consequences which must result from the violence used in order to extract the placenta, and the probable consequences if left entirely to the efforts of nature. It was determined to desist from all manual efforts; to give the ergot in full doses, and, if practicable, to coöperate with it in effecting our object. Uterine contraction was promptly produced by this article; repeated doses were administered, and almost constant pain kept up. In the evening the uterine tumour could be felt externally much lower down, and of a more globular form. With the exception of pain induced by the ergot the patient was comfortable; skin cool and soft; pulse natural. An enema was directed, and the patient left for the night.

17*th*. She had rested well during the night; pulse somewhat excited; skin warm. The efforts used to extract the placenta had been borne by the patient with little suffering; but the uterus had now become sensible to every impression. An examination was made only with the view of ascertaining if any change had taken place since the day previous.

18*th*. She had passed a restless night; some fever this morning; skin hot and dry; no uterine pain. The cord, with a small portion of the membranes, came away in a putrid state. From the particular state of the uterus at this time, all attempts at removing the placenta

by manual efforts were necessarily abandoned. The system had now began to sympathize with the condition of that organ. It became, therefore, necessary to meet this state of constitutional irritation by appropriate general means, at the same time that a solution of the chloride of lime was frequently injected up the vagina in order to correct the fœtor.

It is unnecessary to give a detailed account of all the symptoms and treatment of the case in its progress; it is sufficient to state that for three weeks constitutional irritation demanded almost our exclusive attention. The chloride of lime had effectually removed all fœtor: the discharge from the vagina had been from the beginning inconsiderable, and of a serous nature; had soon entirely ceased; no uterine pain had been felt.

About the middle of March our patient was taken with severe pain, and a sense of heaviness in the uterine region. These feelings had continued all night, and we thought it adviseable in the morning to examine the state of the os uteri, and if the placenta was about to be thrown off, to assist the uterine efforts. The uterus was found low down in the vagina, and sufficiently open to admit the finger; the placenta could be distinctly felt pressing on the os uteri; the finger was insinuated some little distance between the placenta and the internal edge of the uterus. This examination caused an immediate contraction of the os uteri on the finger: any further examination was considered unnecessary. Our patient at this time was considered as convalescent; the pain ceased entirely in a short time; her health and strength improved daily.

On the 26th of March she was again taken with sudden and severe pain in the region of the uterus, with a sensation, as she expressed it, as if something was about to come away from her. Under these circumstances an examination was made. The uterus was found low down; the os uteri entirely closed, with rigid and unyielding edges. Here the examination ceased. From this time she regularly improved in health. In the month of June she left the city for New York, and travelled during the summer. She returned in November in good health, and has continued so to this time. During her absence she has had no uterine pain; has menstruated but twice; *no part of the placenta had ever been discharged.*

Such is a concise statement of facts in the above singular case; how the placenta has been disposed of is altogether a matter of conjecture. It may be supposed that from the peculiar nature of its attachment to the parietes of the uterus, a circulation of blood was kept up subsequent to the delivery of the child, between the two, and that

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the placenta became an organized body. Such, however, was the powerful tonic contraction of the uterus, that it seemed impossible for any circulation to go on in a body subjected to such constant and close compression. It appears more probable, that this action on the placenta expressed from it all its fluids, at the same time that the atmospheric air was excluded, and putrefaction prevented; in this way it soon became a dry, innoxious body, offending only from its bulk.

That for several weeks after delivery the placenta acted as an extraneous body, and that the uterus made frequent attempts to cast it off was very apparent. It is however unnecessary to pursue these speculations further; should any thing occur at any subsequent time worthy of notice it shall be communicated. It is the facts which afford matter for serious and useful reflection in cases of firmly adherent placenta. It is now a rule of practice, that as soon as we are assured, that the natural efforts of the uterus are incompetent to the removal of the placenta, it should be done by art; until this is effected, the woman is not considered as entirely safe; this is certainly a good general rule, but in very difficult cases the practitioner may be much embarrassed in determining on the extent to which he should go in his manual efforts; he knows the consequences if rude and undue violence is offered to the uterus; he dreads the consequences to his patient, and the censure on himself, if the placenta is not removed. Impelled by such powerful motives, a decided and energetic course is pursued; the object is at last attained; but if inflammation of the uterus, extending to the peritoneum, and hectic from fever follow, which at the end prove fatal to the woman, such is the result of the manual efforts used for the removal of the placenta.

In more than one instance have I seen the woman's life sacrificed by an ignorant midwife acting on what she supposed an axiom in her profession, that "the placenta must be extracted." It is not intended by these remarks to censure proper and judicious efforts for the removal of a placenta firmly attached, but to express a belief that if the practitioner goes beyond a certain point, he jeopards the life of his patient by the very means which he honestly intends for her safety. When this point is reached, and beyond which he should not go, is impossible here to state; let him reflect on the two evils presented; let him regard it as a case requiring his most serious attention, and the exercise of his best judgment.

Charleston, February, 1832.

ART. V. *Extirpation of the Testes and Penis, affected with a Cancerous Disease.* By J. C. HALL, M. D.

THE following case, given from memory, illustrates the propriety of pursuing with the knife a disease of the most malignant nature, and threatening a rapid destruction of life.

Mr. S. in mounting his horse many years ago, injured his left testicle, which, after causing much pain, dwindled away. Eighteen months since, this testicle grew irritable, painful, and much enlarged. It resisted every attempt at dispersion, and occasioning much constitutional derangement, reduced him to the lowest extremity. In the fall of 1830, I saw him in consultation with Drs. DAWES and CAUSIN. His aspect was bloated; limbs œdematous; and the lower extremities very painful from the distention; his strength was prostrated, and he might almost be pronounced moribund. The disease of the testis had burst through the inflamed and almost gangrenous scrotum, and was pouring forth a most luxuriant mass of fungus, easily bleeding, and emitting a most horrid stench. Much of this fungus had been clipped away by the patient and his surgeon, but still it was rapidly reproduced. As there was no alternative but immediate death, or an operation, the latter was determined on, but with no other expectation but that of deferring the fatal event. The patient having been revived by cordials, the testicle and all the affected portion of the scrotum was removed. The diseased mass upon examination appeared to arise rather from the tunics of the testicle than from the gland itself. Mr. S. was near sinking after the operation, but finally rallied, and the wound continued in a healthy condition for seven or eight weeks, when it assumed a malignant appearance, presenting all the indications of cancerous action. Defying every effort to arrest its progress, the knife was again resorted to, and the remaining testicle and much of the scrotum was extirpated, embracing every diseased portion. Again the wound did well for some time, but, putting on the same threatening appearance, all the remaining scrotum was cut away, together with a portion of the perineal surface which had become affected.

These several operations were thought at the time to embrace every diseased part, and even more, but the wounds never healed, and finally, after the lapse of a year from the first operation, the disease recurred, and spread over the perineal integuments and the posterior inferior part of the penis, destroying the urethra to the extent of an inch, and affecting the lateral parts of the corpora carvernosa.

Though despairing of success, yet, at the urgent request of the patient, a final operation was decided on. Carrying the scalpel deeply through the integuments and fat upon the pubis, we divided the suspensory ligament and the fascia coming from the thigh to the penis. Thus detaching *it* from the pubic arch, we dissected its crura from the pubic rami, and divided them separately.

The urethra was divided at a very short distance from its exit through the triangular ligament. The operation was completed by carrying the knife beyond all the diseased parts visible, and excavating a large portion of the perineal surface. Eight vessels were tied, as necessarily cut, and no secondary hæmorrhage of importance occurred. The wound left was very large, and the most soothing application was found to be fresh cream. The cure has been effected rapidly, perfectly, and we trust permanently.

Whether the disease with which Mr. S. was affected, was truly cancerous or not, does not depreciate the lesson of perseverance thus taught. His disease was rapidly hurrying him to his end, and had not his resolution give boldness to the surgeon, he would have been abandoned to a most horrid death.

Washington City, Jan. 16th, 1832.

ART. VI. *Observations on Cholera Morbus.* By J. YOUNG, M. D. of Chester, Penn.

THE extreme sensibility at present prevailing throughout the world with respect to cholera, seems to demand of every one, who may have had any experience in its management, a statement of those modes of treatment which have been attended with most beneficial results. Whether our cholera bears any particular resemblance to the European or Asiatic disease, is a question which I am not prepared to answer; but, from all the information that I have been enabled to collect on the subject, I have arrived at the conclusion, perhaps the erroneous one, that the only essential difference between them, consists in the greater violence, and more rapid succession of dangerous symptoms, in the latter, than in the former form of the disease. Be this as it may, the Asiatic disease is emphatically called the "spasmodic cholera," and it is presumed that no one doubts the disease, as it occurs amongst us, being also spasmodic; thus far then, they certainly agree. Antispasmodics are the class of remedies used with most

success, in treating the disease in England, viz. the lancet, brandy, and opium. I have treated more than one hundred cases of the sporadic affection, as it occurs to a greater or less extent every summer in our county; the use of the lancet, I have always been afraid to venture on; in fact, I believe its use can very seldom be resorted to with advantage, or even with safety, unless guided by a nicety of discriminative tact, which too few of us possess; but brandy, opium, camphor, laudanum, with every variety of external applications have all, by turns, been tried; and all, (except external means,) have been laid aside, as far inferior to sulphuric æther in combination with laudanum. The following cases will serve to show the mode in which I have long been accustomed to manage it, better than any other method of description I can adopt.

Case I.—J. G. was attacked at 11 o'clock on the night of the 20th of August, 1826, with cholera morbus. The late Dr. D. being the nearest physician, was called soon after the attack commenced, and staid with him till daylight of the 21st, when I was requested to see him. On my arrival, I learnt from the doctor, that he had taken twelve grains, by estimate, of solid opium, besides repeated portions of laudanum, brandy, camphor, essence of mint, &c. with external frictions of brandy, cataplasms of herbs to the epigastrium, and sinapisms to the extremities; but still the disease progressed. The patient's countenance was sunken and anxious; the whole surface covered with a cold, clammy sweat; the inferior extremities were cold, and drawn in large knots, with cramps; the fingers were stiff, and partially immobile, though not cramped; the pulse was small, quick, and feeble, and it was evident, that unless speedily relieved, death must inevitably ensue in a very short time. I suggested the use of æther with laudanum, as it was probable all the opium and laudanum previously taken, had been ejected, which was agreed to; we immediately gave a tea-spoonful of each in sweetened water; had him wrapped in a blanket wrung out of water as warm as could be borne; reäpplied sinapisms to the extremities and epigastrium; in twelve minutes he puked again, and complained of violent pain at stomach; cramps of legs and thighs continuing, though, as he expressed himself, with less violence; we repeated the tea-spoonful of æther without laudanum, and ordered hard frictions to the inferior extremities, with flannels and hot brandy; from this period he ceased puking and purging, and became gradually more composed. In half an hour the æther was again repeated alone, soon after which he sunk into comfortable slumber for nearly an hour, when he was aroused, and a few spoonfuls of warm

brandy toddy given, which remained upon the stomach; in another hour he took some spoonfuls of panada containing brandy; went to sleep again, during which we left him. Five powders, containing each two grains of calomel, with half a grain of opium, were left, to be given in the afternoon; with directions to give a little panada frequently, made pretty strong with brandy. He went on to mend gradually, so that in a week he could walk about the house.

Case II.—Miss M. S. a delicate young lady, was attacked with cholera at 12 o'clock on the night of July 7th, 1827; at 2 o'clock I saw her; had drank freely of herb teas, which now returned as swallowed; I immediately gave æther and laudanum, a tea-spoonful of each; applied a flannel wet with warm brandy over the stomach; a tea-spoonful of æther was repeated immediately after each ejection, until she had taken the fifth tea-spoonful, when she sunk into a calm, comfortable sleep, from which she was not disturbed during my stay; this is the only case in which I have found it necessary to give more than the fourth spoonful of the æther. Left four powders of calomel, two grains each, and half a grain of opium, to be given at intervals of an hour, in the morning, and be followed with oil, if necessary. She walked down stairs in three days.

Case III.—Mrs. G., an hale, robust woman, was attacked at 2 o'clock, A. M. September 9th, 1827, with cholera morbus. Unavoidable circumstances prevented me from seeing her till 9 o'clock; her situation was, at this time, truly alarming; the countenance was shrunken and contracted; surface cold, and covered with sweat, cramp in the legs and arms; so weak as scarcely to be able to speak; ringing in the ears, and frequent watery, thin evacuations "upwards and downwards;" her parents, husband, and some others, were weeping around the bed, believing she must surely die. I commenced giving laudanum and æther, as in the above cases; had her wrapped in a blanket wrung out of warm water, sinapisms to the extremities and epigastrium, with constant frictions to the extremities, of hot whiskey and pepper, by means of a stiff brush. After taking the fourth tea-spoonful of æther, the disease subsided, and did not again return; I now prescribed for the weakened and prostrate system, and in ten days she could attend to her household affairs.

Many other cases might be added, but these are sufficient to show the mode in which I uniformly treat the disease of late. In fact, such is my confidence in it, that frequently when called, I have sent by the messenger, a vial of æther, with directions for its use, and

thought no more of the case, till I have subsequently met the patient attending to his ordinary concerns. I believe, in a majority of cases, it will not be found necessary to repeat the æther more than once, or at most twice; although no danger will result from it, so far as I have seen, when repeated in tea-spoonful doses the fourth or fifth time, and perhaps oftener if occasion required. I have always ordered calomel and opium in small and repeated doses, as one and a half, or two grains of the former, with half a grain of the latter, every hour, till ten or twelve grains of calomel have been taken, commencing in a few hours after the subsidence of the disease, and followed by castor oil *pro re nata.*

I conscientiously believe, no more prompt or efficacious means can be resorted to in the cholera of our country; and hence I think it might be worth a trial in the spasmodic disease of Europe; particularly as so great a mortality attends it, under all the modes of treatment hitherto resorted to. I was first led to its employment, by Professor Chapman's recommendation of it in flatulent colic. Having been sometimes baffled for hours in arresting it, (cholera,) with brandy, opium, and the various other articles recommended for its treatment, and believing there might be some analogy between it and colic, I determined to try it, and the result has satisfied me, that I was not theoretically mistaken. Æther is, undoubtedly, powerfully antispasmodic, and also, a powerful and highly diffusible stimulus, both which properties are peculiarly demanded in every severe case of the disease; and that it is far preferable to brandy, and will remain on, and tranquillize the stomach, when brandy will be ejected as fast as swallowed, a tolerably extensive experience warrants me in positively asserting. To be beneficial, it is only necessary to observe the same rules that are observed, or recommended in the use of other articles; viz. first completely "wash out the stomach" by repeated and copious draughts of warm water, or warm teas; and accompany its use with any, or all of those external applications, which the good sense of every practitioner will dictate, to meet the indication of restoring warmth, and the circulation, to the surface. Much, I believe, depends on judicious and well-ordered applications to the surface; in fact, without them, we can hardly expect to arrest very many of the cases annually met with, by probably every one engaged in practice; but by a prompt and judicious choice of these, in conjunction with æther and laudanum, very little difficulty will be found in the management of any case of *common* cholera morbus met with in ordinary practice.

Chester, February 25th, 1832.

Art. VII. *Case of Extensive Laceration and Contusion of the Hand, with Remarks.* By William M. Fahnestock, M. D.

Surgical reputation in former days was estimated by the number of operations performed by the aspirant for distinction; which seldom fail to procure a fame in proportion to his pile of dismembered limbs. Modern surgery, however, justly awards the honour to him who instead of removing, preserves an injured member, or reduces an irritation which would eventually destroy an organ and require extirpation. The age has passed away in which a bombastic flourish of the scalpel, and egotistic boasting can excite the confidence of the public. An operator to succeed, at present, must combine with much application and dexterity, candour, prudence, discrimination, and indefatigable perseverance.

Young gentlemen of the profession are, generally, too ambitious of displaying the trophies of their surgical skill around the walls of their office, and are much too apt to risk an operation, which maturer reflection and after experience would teach them to avoid, for the purpose of obtaining some notoriety. We cannot reprehend too severely this wanton sporting with the knife—of subjecting our fellow beings to dangerous experiments, to gratify our vanity, or, peradventure, jeopard their lives, to gain transient eclat.

While we thus censure the temerity of the rash, we must also deprecate the folly and presumption of the ignorant pretender, who frequently advises without a knowledge of consequences, and destroys for want of information to save. A case came under our notice recently, in which the patient was allowed to die of hæmorrhage, from division of the posterior tibial artery, produced by treading on a scythe, *because he refused to have his leg amputated above the ancle that they might secure the divided vessel:* the surgeon or pretender to surgery not conceiving the idea of compressing the artery or of cutting down and taking it up. While we pity the community whose lives and comfort are dependant upon the skill of such an individual, such stupidity not only merits public indignation, but also the penalty of the law—*if* we had any statutes to regulate the practice of medicine and surgery.

Since surgery has been raised above the mere manipulations of an art, and having assumed new importance by an accurate investigation into the pathology of the diseases pertaining to this department of medicine, it can only be exercised successfully by those who study

it as a science, and not as a mere art. An attentive study of the structure, the functions and the recuperative powers of the various parts of the system will often deter us from inflicting unnecessary pain and suffering, and, frequently, of entailing great inconvenience and privations on our patients. The improvements of modern surgery admonish us to great circumspection in taking up the knife to amputate or extirpate any portion of the structure, and has induced a distinguished teacher of surgery in our country to advise the student on providing himself with instruments to go into practice; first, to procure a stomach pump and a set of cupping-glasses in preference to a trephining case or amputating apparatus, with much confidence of him rendering himself more useful to society thus equipped, than with the more tempting weapons. The following case will perhaps better enforce our argument against the improper or unnecessary removal of limbs.

In the autumn of 1825, W. M. ætat. fourteen years, who was employed in a cotton factory, had his right hand drawn into the machinery and before it could be extricated was almost entirely denuded of flesh, and some parts of it left literally a skeleton. The skin and muscles were torn entirely off of some parts, while on most of the others it was in complete shreds. The second and third phalanges of the index, middle and ring finger were perfectly bare; the first phalanx had but little flesh remaining; and the integuments of the metacarpal bones as high up as the wrist, with the whole thumb and little finger were mangled and contused in a most extraordinary manner.

Among the many cases of laceration, contusion, and fractures which came under our notice, during our residence in the vicinity of Manayunk, an extensive manufacturing district in the county of Philadelphia, none presented such slender prospects of restoration, or more imperiously demanded the amputating knife. The lad, however, was poor; had no means of subsistence but his own industry, and no friends who were able to keep him in his misfortune. To save a member, therefore, of so much importance became a serious consideration, and on explaining the nature of the case to his family, who expected nothing else but amputation, we informed them, that it was our duty to remove the hand immediately, to avoid more serious consequences, and that if we did not, we might incur much censure; but that we felt a great anxiety to save the hand, and would prefer making the attempt to do so; to preserve the patient from becoming a burden on society, or the more humiliating dependence of existing

upon the charity of an Alms-house institution. With this view, and with some considerable confidence in the opinion of JOHN HUNTER, that denuded bones have the power of sending forth fleshy granulations, we adjusted the lacerated integuments as well as practicable, by drawing the shreds and remnants of muscle, as much as possible into their natural position with separate rollers for each finger, and formed a mould to place the hand in so as to keep the denuded parts moist, by placing them in simple cerate. The bandages over the bruised part were kept constantly wet with brandy. After a few days we were delighted to find healthy action taking place and soon observed small granulations forming. Encouraged by these prospects of success, we persevered in removing the dressings daily, using as much pressure as possible with the bandages to draw the new-made flesh forwards, and succeeded in getting all the bones covered but the last phalanx of the index middle and ring fingers, which remained exposed, pretty much in the condition as they were immediately after the accident happened: however, they finally took on the granulating process, which gradually covered the bones and completely effected the cure, after encountering many difficulties, and frequent misgivings of the power of nature to restore the parts. This of course required a tedious process, which would be more tedious to our readers to detail. Suffice it to say, that we had a demonstration of the restorative powers of nature, which nothing but the experiment could have convinced us of; and has impressed us with the useful lesson, of depending more upon the conservative powers of the system, and of teaching us more the necessity of aiding restoration instead of removing, at once, an extensive injury.

Thus were our efforts rewarded; and in a few months time the boy returned to his work with a tolerably good hand. We hope our success in this case will prove an incentive to more active exertion and perseverance in attempts to preserve important members. The delightful consciousness of saving a fellow being from dependence should stimulate every surgeon to the most unremitted exertions in restoring injured limbs. Whatever has been our success in the more important operations of surgery, this we consider our proudest achievement; and we hope it may incite others to more laudable efforts, and more glorious results.

ART. VIII. *Ligature of Common Carotid, for attempted Suicide.* By W. E. HORNER, M. D. Professor of Anatomy in the University of Pennsylvania.

ON Monday, June 18th, 1832, a criminal, named Washington Taylor, æt. 34, was brought up before Judge King, to receive a sentence of six years confinement in the state penitentiary, for counterfeiting. Upon the sentence being passed, he immediately drew a knife, and plunged it into his throat, a little below the angle of the lower jaw and on the right side; he then withdrew the knife, and not satisfied with the effects of it, he plunged it again into the same region of his throat, half an inch from the other wound. I was passing the court-house at the moment of this proceeding, and from that circumstance was accidentally called in by one of the persons in pursuit of medical aid.

I found the criminal in the court-room, sitting upright; a handkerchief soaked with blood was held by the persons present, over the wounds; it restrained somewhat the bleeding, but very imperfectly. On its removal the blood gushed out in a large stream, the size of a little finger, (but not per saltum,) from the wounds, and of an arterial colour. Having got this glimpse of the parts, I directed an assistant to apply the end of his thumb to them, and to press firmly against the front of the cervical vertebræ, while I went home, a distance of two and a half squares, for my instruments; on my way I met accidentally Dr. EMERSON, and engaged his assistance.

On my return, I saw that the pressure applied had been systematic enough, to restrain almost wholly the hæmorrhage. I then had the patient inclined half-recumbently on a settee, and changed the pressure to the trunk of the carotid at the lower part of the neck, which arrested the hæmorrhage very insufficiently; I then dilated the wounds by converting the two into one. I spent some minutes fruitlessly in attempting to take up the divided vessels, but the incessant column of blood pouring from them, concealed them so completely that I found it impracticable to succeed. By running my finger into the wound, I felt that the knife had passed in the direction of the carotid arteries and internal jugular vein, between the vertebræ and pharynx; and it was evident, from the copiousness of the hæmorrhage and the redness of the blood, that a large artery was wounded, either one of the carotids, or one or more of their large primary branches. The extreme danger of the individual left no further time for attempts in this region, I therefore determined to take up the primitive

carotid, which I did by extending the wound downwards for two inches, and passing a ligature around the vessel on a level with the thyroid cartilage. The operation was very much embarrassed by the parts being continually overflowed with blood, so that I could scarcely get a glimpse of them for a moment at a time.

The patient resisted with all his might these proceedings, and protested with a loud voice against them, declaring incessantly his desire for the wound he had inflicted to take effect. Immediately on the ligature being drawn around the artery, the bleeding stopped completely, he became relaxed, and seemingly fainty, and his voice, which had been previously coarse, fell to a whisper, and could not be raised above it. The respiration, however, was not disturbed. I apprehended that the par vagum had been enclosed in the ligature, and felt half disposed to put on another a little below, and remove the first. The danger from the hæmorrhage was so pressing, that not having an aneurismal needle at hand, I had used a common one with the point foremost and passed from within outwardly. The hurry of this operation, and the obscurity of the parts from blood, made it impossible therefore to use the caution requisite to avoid the par vagum; and the sudden failure of voice led me to suspect this accident; but after watching the respiration for some time, it appeared to proceed so tranquilly that I determined to let the ligature remain, and especially as it answered so completely the purpose of arresting the bleeding. The operation being finished, and the parts bound up, the patient was sent immediately to the penitentiary in a carriage, and put under the professional charge of Dr. Bache.

July 12th.—The patient is nearly well, his respiration is good, the voice is still in a whisper, though improving, and regaining its former tones; I think therefore that the cause of the feebleness of the latter must have arisen from turning off the supply of blood to the larynx through the upper thyroid artery. The ligature has come away.

In our common dissections of the carotid we find it in front of and against the muscles of the transverse processes. In this case I was surprised to find it much in advance of those parts; is this common, and is it produced by the muscles of the throat drawing it off?

REVIEWS.

ART. IX. *The Library of Practical Medicine; published by order of the Massachusetts Medical Society for the use of its Fellows.* Vol. I. Containing a Treatise on Fever. By SOUTHWOOD SMITH, M. D.; and Clinical Illustrations of Fever. By A. TWEEDIE, M. D. Simpson and Clapp. Boston, 1831.

TO an indifferent observer, it might seem an easy matter to determine the value of any particular course of medical practice; especially would it seem easy to choose between the success of two causes, apparently so opposite as that of free blood-letting and other depletion on the one hand, and that of cordials and stimulants on the other. The object of all practice being to preserve life, and to restore health, that which does this with the greatest promptitude and certainty, and with the least inconvenience and suffering, is, of course, the best. Experience, therefore, which should tell whether the man who is bled and physicked, or he who is stimulated with opiates and tonics, gets well the quickest and the most assuredly, should teach which of these paths to health is to be preferred. If not in regard to diseases generally, at least in reference to an individual disease, might he except such an appeal to experience to be conclusive. And if he were told that diseases of the same name, and possessing many features in common, often differ greatly in some essential parts of their character, and therefore require very different modes of treatment, he might then limit his inquiry to the single disease of acknowledged similarity of character, and expect with confidence that the facility of cure should be acknowledged as a sufficient indication of the proper treatment.

But when he pushed his inquiries a little further, he would find, even with all the limitations that we have supposed, if the disease be one of sufficient severity to require the interference of the physician at all, that some patients die of it, let the treatment be what it may. The self-confident boast of the *enterprising* young practitioner, which is sometimes met with, that he has never lost a patient, is very nearly equivalent to a confession that he has never had one. It obviously never was the design of Divine Providence, that man should live forever on earth; and the power of the healing art is not sufficiently great over any disease, to ensure that it shall never be mortal.

On the other hand, no disease is always mortal. Under every variety of treatment, and every neglect of treatment, some individuals recover from the most fatal of diseases. In regard to particular effects too, where a specific remedy has seemed to produce great results, the same results have appeared in other cases, where the remedy has been omitted. And the advocates of very different modes of practice, are found appealing with equal confidence to the success of their own method, as evidence that it is the correct one; nay, even the fact, that immediate relief follows the exhibition of a particular remedy, is no adequate proof that it conduces to the ultimate cure of these diseases.

Although it be true, therefore, that, as the object of all medical treatment is the restoration of health, that system of practice must be regarded as the best, which the most effectually promotes this object; yet the application of the principle is attended with so many difficulties, as to render it of itself alone, a very insufficient guide in choosing between different methods of practice.

The adaptation of remedies to the character of the symptoms of a disease, affords another means of judging of their suitableness to cure that disease. All our knowledge of such adaptation is, indeed, derived from observation of the effects of remedies in other cases. But in estimating these effects, the profession are more agreed in their opinion of the results, as applicable to particular symptoms, than in regard to the cure of diseases as a whole. For example, there are few men, (a few visionaries there indeed are even here, but they are very few,) who do not agree in regarding bleeding and other modes of depletion as the appropriate remedies for decided inflammation; although there might be much difference of opinion, whether a particular disease was, or was not, of an inflammatory character. So, too, in cases of true acknowledged debility, the greatest bleeder will unite with the most zealous advocate for stimulants, in prescribing tonics, however furiously they may quarrel about the causes of the debility. If then we even fix upon those symptoms which chiefly give a character to the disease, we may hope to find a clue to the true method of cure.

But in its practical application, this principle is not without its difficulties. To say nothing of the opinion, to which we have already alluded, of some who deny that blood-letting and other depletion is an appropriate remedy, even for true inflammation, (and surely little need be said of an opinion so opposed to well-established principles,) it is, in many cases, by no means an easy matter to determine what shall be regarded as the leading symptoms of the case; in other words,

to ascertain what is the primary affection, upon which the phenomena of the disease mainly depend. And when the seat of this primary affection is discovered, there may be much difference of opinion as to its character, whether it is inflammatory or congestive and requires depletion, or debility and demands exciting. It is not yet settled, that inflammation may not be so modified in its character, by complication with other diseases, or by other causes, as to require a mode of treatment very different from that which is ordinarily appropriate to it. And where the inflammation is genuine, so as to give rise to no doubt of this sort, it may, in many cases, produce so little excitement and so much immediate depression, as to be easily overlooked; or the inflammatory stage may pass over so rapidly, and give place to collapse and exhaustion so speedily, that it is not perceived. One physician, therefore, sees the case early, or looks back upon its early history, and discovers the inflammation, and bleeds the patient; another looking upon the later stages of the diseases, finds nothing but debility, and stimulates him.

What shall decide, "when doctors thus disagree." The appeal is made to the appearances exhibited by an examination of the body after death. This leads us to a third mode of ascertaining the proper methods of treatment. When the patient is dead, we may learn how we ought to have cured him. To state the matter more fairly, the appearances after death, go far to explain the true nature of the disease, and the causes of the phenomena which it had exhibited during life, and thus aid essentially in the application of remedies to analogous cases of disease. All this, these examinations may unquestionably do. But there are those, (and one at least of our authors is among the number,) who carry the matter much further, and make this mode of investigation paramount to every other. They would make the changes of structure and appearance exhibited after death the touch-stone, by which all the phenomena of disease are to be tried; and their causes ascertained, and the appropriateness of remedies tested.

There are objections to this mode of determining the question, especially when relied upon so exclusively. We are not always sure that similar appearances, as observed after death, proceed from precisely similar affections during life. Dr. Gooch has shown that children are occasionally subject to a disease, evidently the result of exhaustion, which produces stupor and effusion into the cavities of the brain, of the same appearance, except perhaps in degree, as that which succeeds inflammation of the membranes of the brain. And he quotes Dr. Kelly as having shown, by his own observations, and

those of Drs. Saunders and Leeds of Edinburgh, that in animals bled to death, more or less serous effusion was found in the head. Dr. K. adds "if instead of bleeding usque ad mortem, we were to bleed animals more sparingly and repeatedly, I have no doubt that we should succeed in draining the brain of a much larger quantity of its red blood; but in such experiments we shall I think, find a larger effusion of serum."* In regard to other affections besides those of the head, it is not at all certain that similar observations may not be made. Our knowledge on this point is not yet sufficiently precise and established, to authorize us to rely entirely and exclusively upon its indications.

We return then to the question, what are the means by which we are to estimate the appropriateness and value of medical treatment? Has the physician no principles to guide him in his practice; or is the whole a matter of chance, as is so often "slanderously reported" of us? The answer to these questions is not very difficult, notwithstanding all we have said. The intelligent physician will not rest his judgment upon any one of the modes to which we have adverted, although the ardent theorist may often do so; but by a judicious observation of them all combined, he will not often remain long at a loss in regard to the true effect of remedies. The very fact that there are circumstances, which are liable to mislead him, if properly borne in mind, puts him on his guard and preserves him from being deceived. The man who upon the authority of a single case, announces a new remedy for an obstinate disease, would have saved himself from the mortification of a useless publication, if he had been content to wait a little, and make some further trials of its efficacy.

Medicine has its rules of evidence, as well as the law; and although not so accurately defined, nor so well supported, they are none the less necessary in order to arrive at just conclusions. One of the first of these is that a single case proves nothing in regard to the effects of medicine. The simplest rules of reasoning might teach us this; since we know nothing of cause and effect, in any case, but from the constancy of their relation to each other, and this constancy can of course be established only by a succession of similar occurrences. And yet, obvious as all this is, there is perhaps no more frequent cause of error, in our profession, than a neglect of this simple principle. How often do we see new, and sometimes strange

* Account of some of the most important diseases peculiar to women. By R. Gooch, M. D. p. 368.

modes of practice, recommended and urged upon the ground of their success in a single case.

It is scarcely less necessary, before the value of a remedy or a course of treatment can be regarded as fully established, that its efficacy shall have been tested, by more than one practitioner. The influence of the imagination upon the powers of observation, and the judgment of physicians, is so great that few men seem to be capable of so accurate a discrimination between them, as to make it certain that another will obtain the same results from the use of the same means as himself. Until this is done, however, every new remedy must be regarded as, at best, but a promising suggestion. Not only our periodical journals, but the shelves of our libraries, are full of essays in commendation of modes of practice, always successful to a great degree in the hands of the author, which have so utterly failed in the hands of others, as either never to come into general use, or else to fall speedily into entire neglect.

Nor is it enough that the disease, taken as a whole, is removed. We must follow the action of the remedy into more detail. Every disease is made up of several parts; and the intelligent physician in prescribing for it, has in his mind, not so much the general object of restoring the health, as the more specific object of removing the particular derangements which constitute the disease. The empiric whose only remedy is rubbing, may in the energy of his frictions, rupture an abscess and thus remove the pain of which it was the cause; but it does not thence follow that violent friction is an appropriate remedy for pain and inflammation. This brings us back again to the adaptation of remedies to the symptoms of the disease; or rather to the particular affection of which the symptoms are the indication. Our knowledge of the true character of all diseases is not yet sufficiently complete to warrant us in rejecting every remedy, whose mode of action is not in accordance with our pathological views, provided its utility is established by an adequate succession of careful observations. But we may, and ought to, require a higher degree of evidence of the efficacy of such a remedy than of one which acts in direct consistency with what we know of the nature of the disease. For example, it has recently been proposed to trust the cure of croup to the use of opiates, either administered internally or applied externally. Now if it shall be shown by abundant evidence that opium is the most efficacious remedy for croup, we are not authorized to reject it, because we know this to be an inflammatory disease, and that opium is not under ordinary circumstances well suited to remove inflammation. But we surely may require stronger proof of its efficacy, to overcome

our incredulity than if the ordinary action of the remedy were in accordance with the nature of the affection.

There is one other consideration to which we must advert for a moment. It does not follow that because the immediate action of different remedies is widely different, or even opposite, their ultimate effects are so likewise;—that if one be well suited to the case, its opposite must necessarily be injurious. This is a point to which we apprehend, the attention of the profession have not been sufficiently directed. If it were more regarded many a rancorous dispute might be avoided. One physician bleeds his patients and uses other evacuants, and with such success as to convince him that the practice is correct. Another in the same epidemic abstains carefully from all but the most indispensable evacuations, and gives the most active stimulants, and relies with equal confidence upon the results of his practice, for proof that it is right. No two things can be more unlike than these two modes of treatment appear at first view to be, and it is no uncommon thing, unhappily, to see the advocates of each, treat their opponents with unmeasured severity, as incapable of correct observation, or regardless of human life.

But let us see if the two methods of treatment, however opposite they at first sight appear, may not be reconciled, so as in many cases to be nearly equally applicable to the same state of disease. There are some diseases which the most zealous advocates for antiphlogistic remedies acknowledge run so rapidly into a state of depression and debility, as to require, in some stage of their course, the use of stimulants. On the other hand, there are some few indeed, who see nothing in many diseases, but such a state of debility as to demand active stimulants from their commencement. We trust there are few such, however, and we give them up, as incapable of being reconciled to any rational system either of pathology or practice. There are many others, more reasonable men, who recognize the inflammatory character of most or all acute diseases, in their first invasion, and yet when they see the disease sinking rapidly into exhaustion, they think it better to meet it with stimulants in this second stage than to incur the risk of reducing the strength of the patient by an ineffectual attempt to arrest it earlier. Now these men, although in their practice, they may often seem to differ but little from the last, upon a careful observation of their principles and practice combined, will be found to approach much nearer to the first class, of which we have just spoken. Indeed, the chief difference between them is in reference to the precise period of the disease, at which antiphlogistic remedies should be laid aside, and stimulants assumed. And were

it not that men so readily take sides, and then unconsciously exaggerate both their own peculiarities and those of their neighbours, it would be seen that there is no occasion for any party feeling in the matter; that there is often room for an honest difference of opinion, without supposing either ignorance or eccentricity of character.

The most favourable result unquestionably, in any case, is to arrest the disease in its very commencement; and this of course is always to be aimed at, whenever there is any tolerable chance of success. But very often the time for such an attempt is gone by before the physician is called. It may happen, (very frequently it is so,) that the same general course of treatment, which at an earlier period would have broken up the disease altogether, will still be suitable to mitigate its severity and conduct it to a favourable termination. But in the case we are supposing, if the disease be not arrested thus early, then the remedies which should have done it, do not increase the exhaustion and hasten on a fatal collapse. It is obvious, in this view of the matter, that it will sometimes be a question of great nicety to determine in a given case when the first stage terminates and the second begins;—which course of treatment promises the best result, to endeavour to break up the disease by vigorous depletion, and thus prevent the debility which would otherwise ensue, but at the risk of increasing that very debility if the attempt to prevent it should fail,—or on the other hand, to support the strength by active stimulants, while the disease shall run its course. And this question may be so nicely balanced as to render the chances of success in either course nearly or quite equal.

In such a case as this whichever course of practice is adopted, it must be pursued exclusively and vigorously. Either extreme is here better than the mean. An insufficient bleeding, which does not effectually subdue the inflammation, may but increase the debility, and hasten on a fatal collapse; while a more efficient depletion might have arrested the disease and saved the patient. On the other hand, a moderate quantity of stimulants may but excite the morbid actions to greater energy, when a more free use of them would have roused the system to throw off the disease altogether. Hence, perhaps, the reason that the advocates of either mode of practice, almost always succeed but indifferently, if, at any time, they are induced to try the opposite mode; and are driven back to their former system with increased confidence in its great superiority.

From what we have seen of Dr. Smith's theory of the essential character of fever, we are prepared to find him adopting a vigorous antiphlogistic course of treatment. The lancet is his main depend-

ence; and yet he does not expect a complete and immediate cure from the use of it. The following quotation gives a fair exhibition of his views on this point, and of the principles which he adopts as his guide in the treatment of the fever.

"The only morbid condition of fever, of which we have any knowledge, and over which the medical art has any controul is that of inflammation. Although, as has been so often stated, inflammation be not the primary febrile affection, as far as regards the order of events, yet it is, at least, the primary affection, as far as regards the treatment, if it be not the sole affection that admits of treatment. The remedies proper for febrile inflammation do not differ from those which are adapted to ordinary inflammation; but they differ materially in the mode in which they ought to be applied, and the extent to which they ought to be carried. They can be understood neither in their mode nor measure, until the following questions are determined; namely, What is the precise object that should be aimed at in the treatment of fever? What is it which it is most important to do, and which it is in the power of the medical art to accomplish? An exact and true answer to these questions will afford an invaluable guide in practice: it will point out with clearness what is to be attempted; and it will put a stop to useless and pernicious aims.

"It is in vain to hope to terminate fever by a stroke of art. The pursuit of a remedy, so long and so earnestly sought, endowed with the power of cutting short the disease, is to the physician what the search after the philosopher's stone was to the alchymist, with this difference, that the alchymist, engaged in a vain pursuit, lost only his time and labour; but the physician, engaged in a pursuit equally hopeless, will often, in addition, lose his patient. Fever cannot be cured instantaneously; and to bring a fever patient under the influence of agents capable of exciting a powerful influence upon the system, in the expectation of at once removing fever, is pregnant with danger; and the expectation upon which such practice is adopted, must appear fallacious to whoever has studied the nature of the disease.

"Fever cannot be cured instantaneously: it may be moderated; it may be gradually subdued; from being violent and dangerous, it may be rendered mild and safe: the physician may bring it to this condition; and this is all that he can accomplish. If it come under his care early, and he know with promptitude and decision at what to aim, he will rarely fail in his efforts to secure this object." pp. 221, 222.

If we are to be limited strictly to our author's definition of fever, all this is undoubtedly true. If the disease is not fever until the circle of deranged functions is fully completed, then of course fever as *fever* cannot be cured until the derangement has gone through the whole circle of function. This is no more than to say that a circle, to be a perfect circle must be entire in every part of its arc. Our author, however, could surely mean no such silly truism as this. But if he means to say that fever in the common acceptation of the term, is never cured in its very onset, so that the course of the symp-

toms is arrested, and the patient almost immediately regains his health, then he asserts a proposition, of great practical importance, to which we are by no means prepared to give our assent. Every physician, in even but moderate practice, must have often been called to a patient in the first hours of disease, whose symptoms all indicated an attack of fever; and by a vigorous application of remedies, has checked the disease, so that in a single day, nothing remained of it but a slight debility. Now, no man, it is true, can say with absolute certainty in any given case, that this disease would have gone through all the course of fever, without the intervention of medicine. But from the frequency with which such cases occur, and the entire similarity of their phenomena with those of the commencement of genuine fever, in cases not thus interfered with, we are surely warranted in regarding them as of the same general character. To say that this is not fever, because the disease is cured before all the phenomena of fever have an opportunity to develope themselves, is to adhere to a system of terms, at the expense of reason and truth.

Occurrences of this sort are doubtless much less frequent (perhaps they never arise there) in the wards of a hospital, than in private practice, for the obvious reason that the physician does not there see the patient till the disease is much more advanced. Dr. Smith gives a table of six hundred cases of fever in the London Fever Hospital, showing the number admitted on each day of the fever. Out of the six hundred, two only were received the first day, and but six on the second; and much more than half were as late as the seventh day. It is not surprising indeed that, after such delay in beginning the treatment, it should be impossible to do more than to mitigate the severity of the disease and conduct it to a safer and milder termination. Under more favourable circumstances for early treatment, however, we believe that very many attacks of disease, which, without such treatment, would have been full and complete fever, are cured in their very commencement. There is nothing in the profession which gives the physician so much satisfaction, and which so effectually consoles him for the disappointment of his best efforts in many more advanced cases, as the efficacy of his prescriptions in these early moments of violent disease.

It is, however, only in the earliest periods of the disease, that so favourable a result can be anticipated. After the train of morbid actions has become established, we fully agree with our author in the hopelessness of the expectation of entirely arresting it, by any remedies however active. It is not impossible, that in the intensity of his

pursuit of his leading subject, his language may express more than he really designed; and that on a cooler review of it, he would not a little qualify the opinion which it contains. Be this as it may, he certainly loses much of the force of the argument which follows in favour of energetic treatment, in the commencement of fever, by thus disregarding the most favourable result which such treatment is capable of producing.

It will be remembered that our author regards all the various forms or types of fever, as differing in nothing but the degree of their intensity. The treatment of fever therefore demands little modification to adapt it to the peculiarities of each case, except such as may be required by these different degrees of intensity. In the mildest form of fever, although there is, in his view, the same circle of deranged functions, as in the severer forms, yet the derangements are so slight that a cure takes place spontaneously in a few days. Rest, low diet, and mild purgatives are all that is necessary in the treatment.

But the mildest case may change to a severe one; or the disease may have been severe from the beginning. In either case, the cause of the increased severity is inflammation, "rising in degree, and increasing in extent, or both, in proportion to the intensity of the febrile affection."

"The object to be aimed at in practice, then, is clear: it is to prevent, or to remove inflammation. Accomplish this, the fever will not be cured at once; it will still go on for some time; but it will come sooner to a close, and it will proceed mildly and safely to its termination. Fail to accomplish this, and the fever, however mild at first, will increase more and more in severity, until it become truly formidable, and death take place at last, in consequence of the destruction of the organs by the process of inflammation.

"If excitement be set up in an organ which has as invariable a tendency to terminate in inflammation as a stone to fall to the ground, what is the proper remedy to prevent the transition of excitement into inflammation? Bleeding. Before we can say that inflammation is established we may foresee that it will come: if the preceding excitement be not stopped, we know that it will as surely come, as that blood will flow from a wounded blood-vessel."

"The physician, in the first stage of fever, armed with his lancet, is to his patient what the fireman with his engine, before the flames have had time to kindle, is to a building that has taken fire. At this early stage, the former can check inflammation with almost as much ease and certainty as the latter can prevent the flames from bursting out. On the contrary, the physician who is called to treat inflammation in the later stage of fever is in the position of the man who arrives with the apparatus for saving the house when its stories have been already consumed and its roof has fallen in.

"Bleeding in fever cannot be performed too early. The very first moment

of excitement, could that be discovered, is precisely the moment when the employment of this powerful remedy would produce the greatest effect. The earlier the bleeding, the greater will be the impression made upon the disease, and the less upon the patient; or, the more effectually will the inflammatory action be stopped by the loss of the smallest quantity of blood.

"When inflammation has actually come on, there is then not a moment to be lost; that inflammation must be stopped; the accomplishment of this object is the great end which the practitioner should aim at in every thing he attempts; until he has done this he has done nothing; until he has done this he ought to give neither sleep to his eyes nor slumber to his eyelids; until he has done this he ought to feel that there should be no rest for himself, because there is no safety for his patient. Until the inflammation is subdued blood must be taken; be the quantity it may be necessary to abstract, in order to accomplish this object, what it may; be the bleedings it may be requisite to repeat what they may; the vein must be allowed to flow, and it must be opened again and again until this object is secured."

"Mere relief of inflammation is nothing; to render a severe inflammation a less severe inflammation is to do nothing; because the less severe inflammation may be fatal just as certainly as the more severe; the inflammation must be subdued, or the case, if not wholly lost, becomes dangerous and doubtful.

"The abstraction of blood must be carried to the extent of subduing the inflammation; there is no other limit to the quantity to be taken but that which is adequate to subdue the inflammation. To attempt to measure the quantity by drachms or ounces is wholly vain; because, if the remedy be properly employed, the quantity will vary in every individual case. To take an ounce more than the subdual of the inflammation requires is injurious; to take an ounce less is still more pernicious; to take the quantity necessary to accomplish the object, and no more, is to use the lancet—that powerful instrument, so dangerous in rash hands, and no less dangerous in weak—with the discernment and decision of a master. He who with a knowledge which gives and which justifies boldness and decision, is able thus to employ this great remedy, is a skilful physician, who has derived from study and experience the best fruit they can yield; he who has not yet reached this perfection of his art, (and who among us can pretend to the attainment?) must still go on to observe and to learn." pp. 223, 224, 225, 226.

These several extracts give a comprehensive and pretty complete view of our author's system of practice during the active stage of fever. It is to bleed—bleed early—bleed repeatedly—bleed sufficiently.

"If, after the abstraction of sixteen ounces of blood at the commencement of the attack, the vascular excitement be not completely subdued, in the course of three or four hours, the same quantity must be again taken; and if the next morning, that excitement continue, it will probably have already passed into inflammation; and, therefore, the vein must be once more opened, and the blood allowed to flow until the pain, wherever seated, be entirely removed. To check the disease, instead of subduing it, does not in the least diminish its future strength, and, by weakening the powers of life, it even hastens the

period of mortality. Nothing is more common than the appearance of typhoid symptoms, on the second or third day after bleeding has done nothing but lessen the inflammatory action; whereas, had it been carried somewhat, and generally only a little further, the patient would have been convalescent at the very period when his danger becomes most imminent. In cases where general bleeding produces a decided impression on the inflammation, but does not stop it, cupping, or even leeches, will often complete what the lancet commenced." p. 227.

A due impression having thus been made upon the inflammation by bleeding, little more is necessary in the subsequent treatment but to let the patient get well. A purgative given so as to produce three, or at most four stools in the twenty-four hours is the only medicine. Beyond that number, he says, no advantage is gained by purging; more frequent purging weakens the patient, but not the disease. In addition to this—

"Cold sponging, if the skin be hot, acidulated drink, if there be thirst; perfect quiet, a dark room, a silent nurse affording prompt attendance, with a noiseless step, a cheerful countenance, and no words—this together with three tea-cupsful of thin arrow-root or gruel, in the twenty-four hours given in divided portions, at intervals of about two or three hours, comprises all else, that will be required, or that will be useful, until the period of convalescence." p. 227.

We should be doing injustice to the author's confidence in this course of treatment, and to his contempt for many other remedies which have occupied a large space in the practice of most physicians, if we should withhold from our readers the following note appended to the concluding paragraph on the general treatment.

"It would be trifling, while treating of so momentous a subject as the proper management of fever, which requires the prompt, vigorous, and yet cautious exhibition of the most powerful remedies, to spend any time in discussing the merits of saline, refrigerant, diaphoretic, antimonial medicines, and the rest of the apparatus which unfortunately continues to hold the place of direct, honourable, and well-earned, (if any thing can be well-earned,) remuneration to the practitioner." p. 228.

"Such," adds our author, "is the simple, but most efficient treatment appropriate to the common fever of London and its neighbourhood, (and I do not speak of the treatment proper for any forms of the disease as it exists elsewhere, and which I have not seen,) in its ordinary degree of severity."

Efficient, it most assuredly is, either for good or for ill; and simple enough too, it appears in the description. But in the application to practice, some questions must arise, which are not so fully settled. In the first place, how shall we know when to commence this course of bleeding? The mildest forms of fever, we are told, require little

or no treatment. But we are also told that "because the fever is moderate in the commencement, it is not to be presumed that it will continue moderate through its subsequent course," p. 223; that as certainly as we know that heat and smoke indicate the existence of fire, "with equal certainty we know that fever, though apparently mild in the commencement, will excite inflammation in vital organs, and that that inflammation, if it be allowed to establish itself, will place the fabric of the body in the most imminent danger." p. 224. The author himself with his great number of fever cases constantly about him, may have acquired a practical tact which shall enable him easily to discriminate between those mild cases which require little or no treatment, and those which so readily assume a very grave character. But simple as it may all be to him, we do not see that he has given us any clue to direct us. We are anxious to serve our patient, and as soon as we perceive that he has fever, remembering that although it is now slight, it may soon become severe, till we bleed him freely, and we find that we have used a powerful remedy for a disease that required no treatment. Again, we would avoid unnecessary practice, and seeing the case to be mild, we treat it with moderate purgatives, low diet, and the abstraction of stimuli, and when it is too late to retrace our steps or to repair the injury, we discover that inflammation has been creeping silently in, and we have lost the favourably opportunity to encounter it. We may be told that this difficulty is not peculiar to fever, but is inherent in the treatment of all diseases, and that it must be met by the greater watchfulness and circumspection. This is precisely what we would say. But, let us not hear of a treatment being *simple*, that requires such unceasing vigilance, and accurate discrimination. In truth, there can be no such thing as simplicity in practice, until diseases themselves become simple; and then, man may cease to be mortal.

In the second place, when we have begun this course of bleedings, we would gladly know where to stop. To bleed enough—to bleed till the disease is subdued, is simple enough in the direction—but it is vague and indeterminate in the practice. A very worthy physician of our acquaintance, a few years since put out a pamphlet to establish the value of bleeding in fever; and the only rule we could gather from it was, to bleed; if the bleeding did no good, bleed again that it might do good; if it did good, bleed again that it might do more good. At length he fell sick himself, (for physicians, as well as others, alas! are mortal,) not with fever, but with some chronic affection. He bled himself, and he bled again, and again, (for no one else could be found

to bleed him sufficiently,) and he died, at last, lamenting that if he could only have bled himself *once* more he should have recovered; but in his last attempt, a mist came over his eyes and his hand could not command the lancet; and he must die for the want of bleeding!

We do not accuse our author of so violent a mania for bleeding, as that of which our poor friend died; but we apprehend difficulties and dangers in his sweeping directions to bleed, bleed, which he seems not to fear. He will tell us, that his direction is simple; we are to bleed—not till the fever is cured—but until the inflammation is subdued. But what is the evidence that the inflammation is subdued? Are we not told again and again, that the marks of inflammation are often exceedingly obscure, that it advances silently and secretely, that when conquered on one day, it returns again the next, in the same organ, or in another organ? Shall we repeat the bleedings, so long and so often as there is a daily, or an occasional, exacerbation of the disease? Is there no danger that symptoms, which were at the first caused by inflammation, may at a more advanced stage be produced, or at least closely simulated, by a very different state of the system? This is a point which our author seems to have overlooked, but on which some light has recently been thrown by others; although much still remains to be learned in regard to it.

There is nothing more curious in the whole animal economy, than the manner in which causes which are widely different, or even opposite in their nature, sometimes produce results so similar in appearance, that the most experienced and accurate observers can with difficulty discriminate between them. We might instance the disease produced by an excessive use of mercury; how closely does it resemble that for which mercury is the appropriate remedy. We have already alluded to the fact, that animals bled to death, die with dropsical effusion in the brain. Dr. Gooch presents us with the history of a puerperal fever in which bleeding is speedily fatal, that must be distinguished from the inflammatory puerperal fever, more by the general history and habits of the patient, than by the immediate symptoms of the disease. The same author, as we have before remarked, has made us acquainted with a disease which in a similar manner counterfeits the inflammatory hydrocephalus of children, in which depletion is speedily fatal, and supporting is successful. And Dr. Marshall Hall, has followed out the same principle in an elaborate volume on the effects of blood-letting; which, if excessive bleeding were much more common, than we believe it to be among us, we should regard as of great practical value.

What is the inference that we are to draw from all this? Not, surely, that bleeding, free and repeated bleeding, is not a proper remedy in fever; but that in the application of this so powerful a remedy, more care and caution is necessary than our author seems to recommend. We shall be told again that all the circumstances of the case, and of the constitution of the patient, must be kept in view. And again we reply that this is precisely what we would say. And we repeat again, that the treatment is not to be called *simple*, which demands such vigilance and circumspection. There is, and there can be, no such thing as *simplicity* in the treatment of diseases, so long as diseases themselves are so various and complicated.

It adds in no small degree to the complication in this case, that the immediate relief afforded by bleeding, is not of itself decisive evidence, that that bleeding was either useful or safe. It is the *ruling principle* of Dr. M. Hall's essay to which we have referred, a principle which we think he, and others, have fully established, that the exhaustion of excessive depletion may be followed by a reäction which shall give rise to symptoms, precisely analogous to those of inflammation. And these symptoms will be relieved for the time by another bleeding, although that other bleeding shall be the cause of their return, (if sufficient energy is left in the system to admit of further reäction,) with increased violence. The proper time for bleeding in fever, according to Dr. Smith, is in the early stages of the disease, when there would be less danger of confounding inflammation with the reäction of exhaustion. But he does not restrict his bleeding to the early periods. In cases where there has been no early treatment, or where that treatment has been insufficient, we find him bleeding, either from the arm, or by cupping, or by leeches, on the 6th, 8th, 10th, and sometimes so late even as the 20th, 26th, and 28th, days of the fever. This practice appears more fully in Dr. Tweedie's clinical illustrations, for Dr. Smith gives us but a very small number of cases in exemplification of the treatment of fever; his attention being more directed to the pathology. We are justified however in turning to Dr. Tweedie's cases for the purpose of illustration, since, as we before explained, the cases are used promiscuously by either author, and many of them are repeated in detail in the two works. We here find venesection the 10th day, repeated the 11th, cupping the 12th, leeches the 18th, and repeated the 21st, p. 329. In another case we have venesection the 14th day, leeches the 16th, cupping the 18th, again the 21st, leeches the 26th, and death the 29th, p. 333. In still another, we have leeches the 15th day, venesection the 16th,

cupping the 17th, leeches the 18th, and death the 21st, p. 342. And in some of the cases, the bleeding, although it was begun earlier in the disease, in respect to the number of days, is continued still nearer to the time of death. We were much struck in reading these cases, by the similarity in the phenomena of some of them, to those of some of the cases produced by Dr. Marshall Hall, to illustrate the effects of blood-letting. It was our intention to have quoted one or two cases from each, by way of comparison; but the length of our remarks warns to abstain.

It should be borne in mind, however, in reading Dr. Tweedie's cases, that the plan of his work gives us the results of the treatment in a peculiarly unfavourable view. The cases of successful treatment are not related; while all the fatal cases, occurring during the year, are given in detail. Indeed we can never form any just estimate of the efficacy or appropriateness of the treatment, by comparing the general results, with similar results in a different course of treatment, under other circumstances. The tables in this volume give a full view of the degree of success, exhibiting the whole number of deaths in connection with the number of cases under treatment; and every practitioner may if he pleases make the comparison with the success of his own practice in similar diseases. But while on one hand the Fever Hospital gives great advantages in the management of the disease, in respect to the constancy of attendance, and the certainty of good care and nursing, on the other hand it has the usual disadvantages of a hospital, as compared with most private practice, of late application, separation from friends, &c.

Dr. Smith does not himself rest his confidence in the correctness of his treatment of fever, upon any such comparison of the results with those of other modes; but upon the pathology. After a striking, and we fear but too just, a description of the effects of an inert or an inappropriate treatment in the early stages of the disease, he exclaims—

"I appeal to the attentive observer, whether this be not a faithful history of the progress and termination of hundreds of fever cases; whether such a history may not be recorded as of daily occurrence; whether what has been stated be not commonly the view, the practice, the result, and the lesson.

"I will not appeal to the different history that belongs to cases that are differently treated. But I do earnestly appeal to the pathology that has been stated; that, at least, is experience, and it teaches a lesson, which it is worse than foolish to despise or to forget. Every symptom just enumerated, has been detailed over and over again in the cases that have been laid before the reader; inspection after death must have made the conditions of the organs, as indicated by those symptoms, familiar to his mind. Of what avail can bleeding be, when

the patient is brought into the condition which first excites alarm, in the case here supposed? The blood is no longer in its vessels; it is beneath the membranes, or in the ventricles, or at the base of the brain; the inflamed capillaries have done their work upon the cerebral substance and upon its membranes; and have left proof enough of their activity in the thickening of the one, and the softening or the induration of the other. What can blood-letting do in this state of the organs? What can shaving the head, and applying cold do? What can blisters do? What can purgatives do? And, above all, what can wine do? Nothing can be done; at least nothing effectually or certainly." p. 229.

We have already given what we deem sufficient reasons for not trusting so exclusively as our author does to these views of the pathology of fever. We might enlarge upon this subject, and ask upon his own view of the matter, if fever be a modified inflammation, how knows he that the treatment which in this state, inflammation demands, be not modified also? But although he claims on this point, more than we think is satisfactorily proved; yet he has established enough, and more than enough. We should hope, to overthrow that irrational and destructive system of practice, which we fear, still prevails but too much in some parts of this country, of giving stimulants through the whole course of disease, simply because the disease is attended by debility. We have with difficulty repressed our indignation, when we have seen brandy and cayenne, and cantharides, and opium, (and all these we have known exhibited in company, and sometimes arsenic with them,) mixed up together to drive off a debility, in the onset of acute disease, accompanied by vertigo and coma; as if the oppression of all the sensorial powers could do otherwise than produce debility! And our regret for the extremes, to which, as it appears to us, our author has sometimes carried his opinions, proceeds less from any apprehension that an excess in blood-letting is likely to prevail among us, than from the fear of losing something of the just influence of his observations upon such gross and dangerous absurdities as these.

It is in the condition referred to in our last extract, ("and," he adds, "perhaps it is the only condition,") Dr. Smith allows that stimuli are beneficial in fever. The change of structure, he supposes, produced by the inflammatory process, may not have proceeded to such an extent as to be absolutely incompatible with life; and yet the powers of life be so exhausted as to require the aid of stimulants to save them from being quite overpowered. For this purpose wine or brandy are the stimulants he prefers. Indeed, here as elsewhere, his list of the materia medica is exceedingly simple. We would not quarrel with him for this, if instead of actually turning all the less

active remedies out of doors, he had been content to assign them their subordinate place. To be dabbling with refrigerants and diaphoretics, where bleeding and cathartics are required, or to give the lighter tonics in cases which demand the higher stimulus of wine or brandy, is indeed but trifling with disease, instead of curing it. But there are gradations in disease as well as in other things; and it is idle to do nothing, because we are not required to make use of the most active agents within our reach; or to refuse the aid of milder remedies when those which are more energetic have but partially effected a cure. The medicines which our author rejects with so much contempt, may be no proper substitute for bleeding and cathartics; but it by no means follows that they may not be made useful coadjutors.

Our author's predilection for simplicity of practice does not carry him so far as to lead him to disregard the appropriate remedies for peculiar modifications of fever; although we still find the same preference for efficient, energetic treatment. In the cerebral affection of fever, he makes use of what he calls the *cold dash*, the continued application of which, he says, no degree of burning heat which the animal economy is capable of producing, no intensity of vascular action, and no violence of pain can resist.

"It consists of pouring a column of cold water upon the head in a continued stream from a height of from six to ten feet. The mode of applying it is as follows. The patient is seated in a large tub; a table is placed at the side of the tub upon which a man stands, and at as great an elevation as his arms can reach, pours upon the naked head of the patient a steady but continued stream of cold or iced water, from a watering-pot without the rose. The stream is made to fall as nearly as possible upon one and the same spot. At first, the elevation must be slight, for the shock is too violent if the stream be poured at once from the highest point." p. 335.

This remedy is not to supersede the use of the lancet; but when added to that, our author, in his usual ardent, sanguine manner, says "it forms by the combination, a treatment so powerful and efficacious that it might render death, from the acutest cerebral inflammation, as rare, as recovery is at present." The concluding paragraph on the treatment of the cerebral affection is so perfectly characteristic of the author's style of thinking and practice, as well as of writing that we quote it, more on this account than for its subject matter.

"Cold applications to the head, and evaporating or iced lotions, are useful in mild cases; they may keep up the effect produced by this in the more severe,

but to hope to controul the latter by their aid alone, is to expect to coerce a giant, by twisting around his arms a spider's thread." p. 337.

In severe thoracic affection Dr. Smith uses the tartarized antimony in the manner recommended by LAENNEC for pneumonia. Bloodletting for the bronchial affection of fever, he says, is of little avail. It weakens the patient without making a decided impression upon the disease. In these cases, the tartarized antimony, given in doses of two grains, dissolved in an ounce of water, every second, third, fourth, or sixth hour, according to the severity of the disease, seldom fails.

For the abdominal affection when that predominates in fever, our author has no peculiar method of treatment to recommend. Although general bleeding, "if employed early and with due activity," will prevent the inflammation of the mucous membrane of the intestines "which forms so constant and formidable a part of the organic affection of fever," it will have little influence over it, after it has occurred. Leeches, poultices, and the other common remedies for this affection, are chiefly relied upon.

After commenting so freely as we have done upon some parts of this work, it is difficult to express our real opinion of the work as a whole without some appearance of inconsistency. For notwithstanding all we have said, we do regard it as one of the best treatises on fever in our language. His theory of fever does not satisfy us. But there is a clearness and a vivacity in his descriptions, which are exceedingly engaging. He brings before us his collection of observations, and although he doubts not for a moment, that we shall all draw the same conclusions from them that he does himself, he does not attempt to force us, by distorting them. In his practice too, he is watchful and attentive, and to a considerable extent, discriminating, notwithstanding his excessive love for energy and decision. In fine, although we would not recommend his work as a safe guide to be implicitly followed, (and what work can be so recommended?) yet there is much in it, that must excite the attention of the profession, and on the whole we should hope, greatly improve the general style of practice in febrile diseases.

The faults of the work are those of a young practitioner. When the author shall have seen a few more years of practice; and especially when his practice shall have extended more into a different class of patients, we doubt not he will see reason to qualify not a little some of his positions. In the mean time, those whose experience will enable them to make the qualifications for themselves, will still find

enough, for which they are indebted to him, to induce them to regard his work with no small share of complacency and approbation.

The *Clinical Illustrations* of *Fever*, by Dr. Tweedie, is a work of great interest and value. His opportunities for an extensive observation of the disease were very similar to those of Dr. Smith; and the two publications contain as we have seen, a narration of many of the same cases. Yet the plan of the two works is so different, that they do not in any material degree interfere with each other. Dr. Tweedie's is a very modest, unpretending sort of a book; but it abounds with most important matter. It is a collection of facts, deduced from his own observation, with little of theoretical speculation; and only just enough of generalization to connect the different parts of the work together. It gives a history of fever as it appeared under the author's care during eight years that he had been one of the physicians of the London Fever Hospital—a description of the phenomena, as they were exhibited at the bedside, and of the treatment pursued, and of the results of the treatment; and a minute history in detail of all the fatal cases which occurred in one year, with the appearances on dissection of all those in which an examination was permitted.

It would be doing great injustice to our opinion of this work, to infer its relative merit, as compared with its twin-brother, by the length of our remarks upon each. For permanent practical value, this is in no degree behind the other, and in many points of view, it is decidedly superior to it. But besides that our critical propensities are somewhat exhausted by the length of our remarks upon Dr. Smith's treatise, the nature of this work, consisting as it does of statistical and practical details, hardly invites criticism or admits of analysis. E. H.

ART. X. *Treatise on Puerperal Peritonitis.* By A. C. BAUDELOCQUE, M. D. &c. &c. to which was awarded the Prize of the Royal Society of Medicine of Bordeaux. Translated from the French, by G. S. BEDFORD, M. D. Lecturer on Obstetrics. New York, 1831. pp. 478. 8vo.

WE have selected the present work for an analytical review, both because the disease is one of too frequent fatality, and but little studied by physicians generally, and because we believe it presents a pretty complete view of what is now known respecting the disease treated of, presented in a clear and philosophical manner. There are in fact no diseases about which there exists a greater discrepancy of medical opinion, or which are involved in more embarrassing speculations, than those of the puerperal class; and we hail with pleasure an attempt "to determine by clinical facts, those cases in which the different modes of treatment prescribed in peritonitis are applicable." This question will not be regarded with indifference by those who have witnessed the frequent unsuccessful application of remedial means, or who are desirous of properly appreciating the resources of art in combating a dangerous malady.

Etiology.—The causes of puerperal peritonitis have been divided into predisposing and efficient; but this distinction cannot always be recognised in practice, and would, if adopted, lead to useless repetition. It is therefore rejected.

I. *Changes which pregnancy effects in the organism.*—It has been remarked by PUZOS and other authors, that upon conception a change takes place in the humours; a portion of milk is discovered in the blood, which is carried to the uterus for the nourishment of the child. The excess, deviation, and sometimes the bad quality of this milk, according to these writers, is the source of most of the diseases that occur during pregnancy, and the puerperal period. This change in the blood, they say, is apparent on bleeding a pregnant woman, the coagulum being covered with a whitish pellicle, more or less thick, resembling the inflammatory coat. Sometimes it is only perceptible by the opaline colour it imparts to the blood. The blood likewise, they maintain, has a very large proportion of serum; hence the frequency of serous infiltrations. Effusions in the inferior extremities may sometimes be occasioned by a diminution of pulmonary perspiration, owing to the impeded circulation through the lungs.

Though we admit the fact of a change in the humours, as above described, yet we cannot allow that it has any agency in producing

puerperal peritonitis. This condition is always connected with the existence of pregnancy, in all places and seasons and under all circumstances; yet this disease does not attack indiscriminately, nor is it of uniform frequency and danger. To the objection that to this condition of the humours the exciting causes owe their efficiency, we may remark that there should result from this something peculiar in the nature and progress of the disease, whereas we see nothing in it but what is met with at other periods of life and among children and men. Besides, we believe that a phenomenon constantly connected with the accomplishment of a certain function, should be favourable to the proper execution of that function, and not that nature has associated with the performance of one of her most important acts, a danger inherent in the very essence of that act. The most we can admit, is, that there may result from this state of the fluids, a slight modification in the diseases consequent on pregnancy and delivery, as, e. g. a more abundant effusion in inflammations of serous membranes, and more copious critical evacuations.

Gestation is attended with sanguineous plethora, and this has been advanced by some as one of the causes of peritonitis. It however rarely occasions any accidents, as nature possesses so many means to remedy it during and after labour; and besides, we do not understand how it should favour the development of this disease, rather than that of any other inflammatory affection.

Another species of morbid influence, as maintained by some writers, is the pressure of the gravid uterus on the abdominal viscera; but this cannot be considered as having any considerable agency in the production of peritonitis. Much importance has been attached to the changes which pregnancy determines in the peritoneum, causing its distention and increase of surface, and a corresponding increase of action and vitality. The more active the organic movements are in any part, the more predisposed this part will become to disease. In this manner the peritoneum may be so modified, as to be liable to take on diseased action, whenever circumstances concur to derange the healthy functions.

Peritonitis is not an unfrequent occurrence after delivery, when an actual or latent chronic affection has existed during pregnancy or previous thereto. Interesting cases are detailed in illustration, to which our limits only permit us to refer.

II. *The operation of labour.*—It is the opinion of Delaroche, Doublet, Osiander and Hufeland, that puerperal peritonitis occurs most frequently in females who have had a very prompt delivery, and this doctrine is supported by an aphorism of Hippocrates. It

is satisfactorily ascertained that the peritoneum is susceptible of inflammation after the easiest and shortest labour, precisely as it is after one of difficulty and extreme duration. We have reason to believe that a predisposition to the disease already existed in those females, who, having previously been subject to some chronic affection, are seized with peritonitis after labour; that there is a particular condition of the solids and fluids, not recognised by our powers of observation, which leads to diseased action. The use of instruments, and the introduction of the hand into the uterus, are likewise frequent causes of peritonitis; especially is to be apprehended when there occurs any laceration of the parts. According to M. Duges, of four hundred and fifty-six cases of puerperal fever, thirty-two were in consequence of artificial parturition. This disease is also often excited by efforts to bring on abortion or premature labour, by blows and other external injuries, and by too great compression of the abdomen after delivery. The presence of a putrid fœtus in the uterus is another cause of peritonitis, and the danger seems proportioned to the degree of decomposition. A case is detailed in proof of this, in which the perspiration had a fœtid odour for several months, which our author attributes to an absorption of putrescent matter into the maternal circulation. A profuse loss of blood seems likewise often to precede this disease. This fact is fully established by Madame La Chapelle, who states that nearly all those who were attacked with hæmorrhage in consequence of the placenta being attached over the mouth of the uterus, fell victims to an inflammation of the peritoneum. To these we may add the plugging of the vagina, the forced action of the uterus, the employment of refrigerants and astringents, &c. as efficient causes, especially in hospitals and infirmaries.

III. *The regimen pursued during pregnancy, and particularly during and after labour.*—This cause is one of great efficiency, especially among the lower classes, where privation is followed by revelry and intemperate gratification, in which wine and liquors are freely drank. The foundation of peritonitis is often laid by the use of acrid, irritating remedies, emmenagogues, violent drastics, &c. exciting drinks during labour, and the ingestion of solid aliment afterwards are highly dangerous.

IV. *Suppression of the lochia.*—This has been regarded as a very serious accident and capable of generating the most fatal diseases. We frequently see inflammations developed after the suppression of hæmorrhoidal, catamenial and epistaxical discharges, and analogy would seem to show that the same may also occur after the derangement of the lochial evacuation. While we admit that such effects may

follow, yet in general we regard this suppression, as the effect rather than the cause of puerperal peritonitis. It is remarked by Delaroche that the most alarming symptoms of puerperal fever manifest themselves without being preceded by any alteration in the quantity or quality of this evacuation, and on the other hand that it becomes suddenly suppressed, without being followed by any serious consequences. It also sometimes happens that the flow of the lochia is not deranged during the progress of peritonitis. White assures us, that he has often observed, that women whose lochial discharge was most abundant, appeared more disposed than others to what are denominated putrid fevers. The return of the lochia previous to convalescence, which is thought by many to prove the efficiency of its deranged secretion, must generally be attributed to a favourable change in the malady, as a return of the cutaneous, mucous (&c.) secretions, indicates a favourable crisis in all febrile affections. A belief in the contrary doctrine, has led to a fatal practice in the administration of excitants of various descriptions, under the name of emmenagogues, &c. &c.

V. *The suppression of the secretion of milk.*—Milky metastasis. Willis first particularly called the attention of physicians to this cause, since whose time, it has too generally been regarded as of primary importance in the production of peritonitis. Puerperal diseases received the name of milky deposits, and in causing inflammation, it was supposed that the milk instead of finding an outlet at the breast, was taken into the circulation and deposited in the peritoneal cavity. The treatment was predicated on this theory, hence the origin of antilactic remedies. It is now ascertained that the disease may appear before the existence of the milky secretion, and even before delivery. Indeed it is maintained by Tissot, that pregnancy causes such a change in the vessels, that they are capable of converting chyle into milk without the coöperation of the mammiferous glands. Such theories are not worth opposing. The doctrine receives no support from chemical analysis; besides, the secretion of milk often continues during peritonitis. It may be retarded, or suppressed at the commencement of the disease, and reäppear during its progress, without producing any material change in the condition of the patient. Again the disease is sometimes cured, long before the milky secretion returns. It is maintained by the partizans of the theory of milky metastasis, that women who nurse their children are less subject than others to attacks of peritonitis, that the act of sucking arrests it, and that the reestablishment of the secretion is followed by a speedy cure of the disease. Now, admitting these positions to be true, which we do not,

an explanation may be found in the circumstance, that the mammæ became a centre of action, and by concentrating the vital forces offer an obstruction to any improper direction these forces might effect. By this revulsive action, the act of suckling may check a slight and incipient peritonitis, but should the disease be intense, such an effect would not be likely to follow. On the contrary, however heretical the doctrine may appear, lactation may become the cause of peritonitis, under certain circumstances. (For proof of this assertion, see cases detailed on p. 84–5, &c.) Experience then, abundantly proves that there is often not the slightest connexion between recovery and the restoration of the milky secretion. When peritonitis or any other violent disease commences, the part becomes an attractive centre of action, the cutaneous, mucous, serous, biliary, urinary, as well as the milky secretion, become checked or entirely suppressed, and as soon as the disease has lost its intensity, the equilibrium becomes again restored, and the secretory organs resume their appropriate functions. It is not however to be supposed that the suppression of the milk never produces any serious consequences. It has undoubtedly caused peritonitis, when occurring suddenly from some moral emotion, or from the use of astringents and local cataplasms. Its danger has been on the whole, much overrated, though its occurrence is not to be overlooked or disregarded.*

VI. *Constipation.*—Constipation not unfrequently attends sporadic peritonitis. It is difficult sometimes to determine whether it should be regarded as cause or effect. Peritonitis may occasion constipation by checking the secretions; and the collection of fæcal matter may, on the other hand, cause this disease, either from mechanical disten-

* In opposing the doctrine of milky metastasis, Baudelocque quotes the following case from the General Journal of Medicine. "A hatter, thirty-nine years of age, of strong constitution, fickle and very irritable character, had experienced for an hour and a half vertigo, weight and uneasiness in the head, particularly about the posterior part of the base of the cranium, when he sent for my learned colleague Dr. Collineare. He was immediately bled from the right arm. The blood as it passed from the vein, was thick, of a light, dirty red, and in proportion as it cooled in the basin, it was changed to a sort of marble and whitish-red colour. Some drops which fell upon the floor became white in a few instants, and presented the aspect of *chocolat au lait.* In an hour and a half a clot of ordinary size was formed, surrounded by a large quantity of *a whitish, opaque fluid, precisely similar to milk.*" We have observed the same appearances lately in a patient, a carman, whom we bled for an attack of pleuritis. The blood falling on the floor, was mistaken for milk, and the whole serous part of the blood, on cooling, could not be distinguished in appearance from milk. We regret that we did not subject it to chemical analysis.

tion, or the evacuation of gas. White and Denman attribute considerable agency to this cause.

VII. *Retention of urine.*—This retention is not very rare after delivery. There are some cases recorded of rupture of the bladder and of effusion, which were promptly fatal.

VIII. *Retention of the placenta in totality, or in part; of clots more or less numerous; of the lochia.*—Peritonitis from any one of these causes, owes its origin to the absorption of putrid matter into the circulation, reacting on the most sensible part. This effect is not a necessary consequence, but the frequent result of such phenomenon. White has probably exaggerated the frequency of this cause of peritoneal inflammation, and he was led into it from the fact of finding, on opening such as died of the disease, a layer of putrid matter lining the interior of the uterine cavity. We may remark, that this deposit is not peculiar to those who have fallen victims to peritonitis; it is likewise found after death from other diseases. It is the result of a peculiar action, which takes place on the inner surface of the uterus, designed to place this organ in the situation it was in before conception.

IX. *The moral affections.*—It is truly remarked by Delaroche, that the passions and emotions of the mind, particularly those accompanied by fear, are among the most evident causes of peritonitis. When it prevails epidemically, it often happens that the receipt of bad news, censure, the sight of disgusting objects, &c. will be followed by its invasion. "I have several times remarked, at the Maison d'Accouchement, that the grief experienced by certain females, when their children were taken from them to be placed in the Foundling Hospital, became, in a few hours, the cause of peritonitis; and the same thing we sometimes observe in private practice, when the nurse carries to her home the infant, without our being able to discover any other cause than the inquietude of the mother with regard to the welfare of her child, and the sorrow she experiences on account of the separation which has been deemed necessary."

X. *Climate and seasons.*—"The coldest countries," says Doublet, "are those in which delivery is followed by the most fatal consequences. In England a much greater proportion of women die in child-bed than in France; in Italy, however, there is still less fatality than in France; and the same holds true as we advance further south." M. Savary remarks, that in Egypt, puerperal diseases are unknown. According to statistical tables, kept at Hôtel-Dieu and the Maison d'Accouchement, it appears that peritoneal inflammations were the most frequent during the autumnal and winter months. In accounting for this fact, some discard the notion of temperature, and look to the humidity or dryness of the atmosphere as the cause; while others

deny their agency altogether. During some years, puerperal fevers are more prevalent during the summer months, as we find by consulting the tables of Tenon. Of four epidemics of puerperal peritonitis, which Dr. Cliet observed at the general hospital of La Charité, at Lyons, one commenced at the end of May, 1819, and continued till the month of September of the same year; another occurred in the spring and summer of 1821.

XI. *Change of the atmosphere.*—A vitiated atmosphere from want of ventilation and crowding together too many patients in a room, is one of the most efficient causes of epidemic peritoneal inflammations. Peu, who first mentioned this cause, expresses himself as follows:—

"A learned physician, M. Vesou, told me, that in the year 1664, he was sent for by M. De Lamoignon, first President of the Parliament of Paris, and consequently first director of the Hôtel-Dieu of that city. He desired to know the cause of the great mortality of the lying-in women of the above hospital. It was suspected, or at least feared, that it arose from negligence on the part of the persons in charge of the institution. The mortality was observed to be the greatest in certain periods and seasons. The difficulty was soon explained. The physician above alluded to, opened several of these unfortunate women, and they were found filled with abscesses. He examined with great care into the cause of this, which in fine he attributed to the disadvantageous situation of the place, or rather of the ward of these females; which was immediately above that of persons suffering from wounds; so that the infectious vapours which arose from the sores and ulcers of these wounded bodies, generated an impure and malignant atmosphere. This atmosphere, continually ascending, was respired day and night by the lying-in women; they were afterward affected with a sanguineous flux, which continued until their death. The deaths among the women were proportioned to the number of wounded in the lower wards. The warm and humid atmosphere, or cold and humid, was incomparably more injurious than the warm and dry, or the cold and dry, during which the vapours did not make so strong an impression, either on the air, or the patients. In a word, this great mortality did not occur when the females were in a ward below the others," &c.

A collection of women, recently delivered, is more pernicious than that of other individuals under ordinary circumstances, on account of the fæcal and lochial evacuations, and copious perspiration, evolving injurious exhalations; while by respiration, the vital portion of the air is abstracted, and its place supplied by a poisonous gas, highly debilitating in its effects. If we consult the history of lying-in institutions, we shall find that the mortality augments with the number of confinements in a ratio far superior to the number itself. Our author doubts the contagiousness of puerperal peritonitis, yet acknowledges that it would be the part of prudence, to always act on the supposition, that the disease is contagious.

XII. *Embarras gastrique.*—By this term we are to understand the presence of impure matter in the *prima viæ*, colluvies, &c. This deranged state of the digestive organs may only be considered in the light of a predisposing cause.

The author sums up his remarks on the etiology of puerperal peritonitis with the following conclusions.

1. "That we cannot deny the changes effected in the humours of the female after conception; that these changes must not be regarded as depending on the presence of milk, nor as capable of generating peritonitis.

2. "That sanguineous plethora, so common in pregnant women, does not merit much importance, considered as a cause of peritoneal inflammation after accouchement.

3. "That the compression and distention of the peritoneum are not to be regarded as causes of peritoneal inflammation; that its distention can, at most, only render it more accessible to the action of the morbid causes, and impart greater danger to the disease.

4. "That severe pregnancies do not more dispose to peritonitis than those exempt from every species of accident.

5. "That when at the moment of accouchement, the woman is attacked by an acute or chronic disease, we frequently see this disease complicated with peritonitis.

6. "That inflammation of the peritoneum may occur after a labour the most prompt and easy, equally well as after one which has proved the most tedious and severe.

7. "That the introduction of the hand or instruments, in order to terminate the labour,—violence done to the uterus or the abdominal parietes, sometimes gives rise to this phlegmasia, which is inevitable after the Cæsarian operation, and the rupture of the uterus.

8. "That a dead child remaining in the uterus disposes the woman to peritonitis.

9. "That great losses of blood, and the means necessary to arrest them, sometimes become causes of peritoneal inflammation.

10. "That the suppression of the lochia and milk are more frequently effects than causes of peritonitis, and that their metastasis is by no means demonstrated.

11. "That constipation, retention of urine, putrefaction of a part of the placenta, and of clots of blood which have remained in the uterus, may generate peritonitis.

12. "That the moral affections of every kind, particularly those accompanied by fear, though their effects have been much exaggerated, may occasion peritonitis.

13. "That cold climates and seasons predispose to this disease; and that, without attributing to cold air, whether dry or humid, all the influence which has been ascribed to it, we must admit that a partial or general chilling of the body has been frequently followed by peritoneal inflammation.

14. "That the alteration of the air, its vitiation by deleterious miasmata in

greater or less abundance, is the most frequent cause of puerperal peritonitis in hospitals, in which it prevails epidemically.

15. "That facts appear rather against than in favour of its contagious character; that, however, the present state of science authorizes doubts upon this point.

16. "That the existence of putrid matter in the primæ viæ has no very evident influence in the production of puerperal peritonitis."

Symptomatology.—The symptoms of puerperal peritonitis vary according as the disease is sporadic or epidemic, and are modified by the nature of the predisposing and exciting causes. It is generally ushered in by a chill, sometimes slight, and of so short duration as scarcely to be noticed; at other times it is extremely violent, and the whole body is agitated. There are instances, as in the epidemic described by Clark, where the disease commences without any chill, but in such cases there is great general lassitude, and a peculiar disregard of the patient for her offspring. These symptoms usher in an usual heat of skin, with cephalalgia, thirst, frequent pulse, and what is characteristic, either constant pain over the abdomen, or great tenderness on pressure. The distress generally commences about the loins, extending gradually to the hypogastrium and abdominal cavity. The patient can lie only on her back, the pains being increased by the slightest motions of the body, or pressure on the abdomen; even the weight of the bed-clothes becomes intolerable. Tumefaction succeeds, following the course of the pain, being sometimes general, at other times partial. The frequency of the pulse increases, the respiration is accelerated, the jugular veins swell from the impeded pulmonary circulation, the thirst becomes more annoying, the tongue at first soft, moist, clean or coated, soon becomes red, especially on its edges, dry, and recoils on itself. The countenance indicates great suffering, constipation or diarrhœa may attend. The lochia is deranged, the milk suppressed, the abdomen becomes shrunk and wrinkled, the urine is small in quantity, and of a deep colour, depositing a whitish, mucous sediment. The anxiety is extreme, and when the disease terminates fatally, all the symptoms increase in severity until a certain period, when they suddenly subside, the patient feels more comfortable, but the vomiting of matter, at first yellow, then green, becomes troublesome; a clammy, cold sweat, suffuses the forehead, face, and thorax; there is aberration of mind, then delirium; the extremities become cold, and assume a livid colour; the features are changed; the pulse is scarcely perceptible; and at length death closes the scene.

Such is the general course of peritonitis, where it terminates fa-

tally. The symptoms of course vary in different cases, but the *tout-ensemble* is such, as generally to leave an excuse for a mistake in the diagnosis. When the inflammation of the peritoneum is confined to a small portion, the disease assumes a milder form, and has a character less distinctly marked; the patient daily experiences a slight chill, an evening exacerbation of fever, failure of strength, sleeplessness, emaciation, vomiting, diarrhœa, &c. Effusion sometimes occurs, or suppuration, which is speedily followed by death. Our author dwells at length on this part of the subject, but our limits forbid a more copious abstract.

Complications.—Puerperal peritonitis rarely exists in an isolated state. It is most frequently complicated with pleuritis, and then it is always attended with danger, and often difficult to recognise. It is generally characterized by great oppression, frequent pulse, and throbbing of the jugular veins. There is an obtuse pain behind the sternum, little cough, and much distress on motion; and as auscultation and percussion can rarely be practised to advantage in such cases, owing to the increased volume of the mammæ, the pleuritic affection is rarely discovered, till revealed by autopsic examination. The pressure to which the lungs are accustomed during pregnancy renders the difficulty of respiration occasioned by pleuritis less sensible; the sac of the pleura finds but little resistance in the ribs and diaphragm, and the result is a more limited and less rapid compression of the lungs.

Another frequent complication of peritonitis is inflammation of the womb. Some authors believe that peritonitis ordinarily commences in the uterus, but dissection proves that in sporadic cases, at least, the uterus remains in a healthy condition. When inflammation, however, primarily attacks the uterus, it is apt to be propagated to the peritoneum, though this complication cannot always be determined by the symptoms. There exists an affection of the uterus, rarely met with, unaccompanied by puerperal peritonitis, especially when epidemic, designated by Baer by the term *putrescentia uteri*, and by others *ramollissement*. This complication is always fatal, and is detected only by its rapid progress, and the most dangerous symptoms at the commencement. The neck of the uterus imparts the sensation of cold to the touch, and the pains may be violent or entirely wanting. By this affection the tissue of the uterus is converted into a homogeneous, livid, brown or blackish pulp, with no trace of organization, and of a fœtid odour.

Another not unusual complication is inflammation of one of the synovial membranes. It is met with particularly in the articulations

of the hand and knee, and sometimes also in those of the elbow, shoulder, hip, and feet. Sometimes the signs of inflammation are absent during life, even when pus is found in the membranes after death.

Another affection coëxistent with peritonitis, is *phlegmasia dolens*, which is simply an inflammation of the lymphatic vessels. This is a tedious and not unfrequently a fatal complication.

Enteritis sometimes exists simultaneously with peritonitis. This is usually fatal, and not easily detected by symptoms. The disease runs its course rapidly, and on dissection, the intestinal mucous membrane is found red, thick, and ulcerated. There are other rare complications not worthy of particular notice.

Prognosis.—According to Delaroche and Duges, four-fifths of the women who die in child-bed, are victims of this disease. The danger varies according to a variety of circumstances. The chance of recovery is much greater if the patient has a good constitution, labours under no other disease, has been accustomed to a sufficient quantity of wholesome, nourishing food, and finally has not lost a large quantity of blood at the time of accouchement. Hulme remarks that the disease is most fatal among those females who have suffered from constipation during pregnancy. Epidemic cases are more generally fatal than sporadic. Of thirty-nine cases of the former at the Hôtel-Dieu, thirty-six ended in death; and of twenty-five cases in 1811 at the same hospital, twenty-three died.

Puerperal peritonitis, according to our author, consists in an alteration of the fluids, especially of the blood, manifesting its existence principally by the inflammation of serous membranes, existing in fact previously to the inflammation. On the other hand, Legouais and others regard this change in the fluids as consecutive, and the result of a purulent diathesis, produced by the absorption of pus effused in the peritoneum.

The danger of peritonitis from an internal cause will be proportioned to the severity of this cause, and to the degree of alteration in the fluids.

During the year 1821, two thousand three hundred and seventy-four women were delivered in the Maternité at Paris. Of these, fifty-one died. Of twenty-seven cases of peritonitis occurring in the month of January, twenty-one were cured; in February, there were twenty-six cases, and twenty-one cured. These cases were considered sporadic. When peritonitis developes itself soon after delivery, or the symptoms succeed each other with great rapidity, the prognosis will always be more or less unfavourable. While some regard

tenderness and tension of the abdomen, as indicating the degree of danger to be apprehended, others consider the state of the pulse as furnishing the most certain signs for the prognosis.

"By carefully attending to the state of the pulse and respiration," says Hulme, "much may be learnt respecting the fate of the patient labouring under this disease. If the pulse be very quick, and the respiration frequent and small, it portends great danger. If, on the contrary, the pulse becomes slower, the breathing more free and full, it is a certain sign of a change for the better. A quick pulse, singly considered, is at all times a dangerous symptom, and the more so, if very weak and small.—*So infallible is the beat of the pulse, with respect to number, that though all the other symptoms should abate, and the disease seem to be gone off, yet, if the pulsations do not decrease in proportion, a relapse, or some other disorder, is to be apprehended.*"

An abundant diarrhœa indicates great danger, and when accompanied by abdominal swelling, still greater; whereas, when the discharges are scanty, and followed by a diminution of pain, tension, and inflation, with a slower pulse, it is a mark of safety. Spontaneous vomiting in the latter stage of the disease is an unfavourable symptom, especially when the matter ejected is of a brown, green, or black colour. Aphthæ in the fauces and mouth, according to Delaroche, announces a fatal termination, while the restoration of the suppressed secretions points to a favourable termination of the disease. The complications of peritonitis render the disease more alarming, in proportion as they are themselves more dangerous. In short, "acutorum morborum non omnino tutæ sunt prædictiones, neque mortis, neque sanitatis."—(Hip. Aph. 19. Sec. 11.)

Lesions observed in the peritoneum after death.—These vary according to the severity, duration, and termination of the disease. When it is severe, and terminates fatally within forty-eight hours, we find a general redness of the peritoneum with one of the following states.

1. The peritoneum is either smooth and to appearance dry, covered, however, as will appear on close inspection, with a thin layer of purulent, whitish, concrete matter; or 2. The peritoneum is humid, and a small quantity of thick, reddish fluid is observed in the hypogastric region. Sometimes several portions of the peritoneum and part of the epiploon present a grayish-brown colour, are detached by the slightest contact, and emit a cadaverous odour, indicating gangrene. When peritonitis has continued several days, the redness is less general and distinct; there are spots of a brownish-marbled appearance, and the peritoneum is covered by a layer of homogeneous pus, one or two lines in thickness. More frequently this membrane contains in its cavity a considerable quantity of fluid, clear, yellow-

ish, green, orange, or opaline in appearance. The gas which usually causes the abdominal inflation, is generally contained in the intestines, sometimes in the peritoneal cavity. In the midst of the effused fluid, flocculi are observed, more or less abundant, of a fibrinous nature, though formerly considered albuminous. They are ordinarily found in the ovaries, Fallopian tubes, broad ligaments and fundus of the uterus, adhering to, and often covering them to a great extent. Doublet calls them a collection of coagulated matter, floating here and there, and adhering to the intestines. At other times, these particles extend from one point to another, circumscribing certain parts, and forming several small cavities, becoming organized serous membranes, with equal consistence as that of the peritoneum itself. In the midst of the fibrinous particles floating in the effused fluid, we sometimes observe detached portions of the epiploon, which have become gangrenous. They are of a grayish colour, break under the finger, fall into decay, and exhale a remarkably putrid odour. Instead of the fluid and flocculi above described, we sometimes find a grayish, turbid matter. When death occurs at a later period of the disease, there may be found no effused fluid, but in its place an organized membrane, lining the peritoneum, of greater or less thickness, presenting red points, and yellowish-red striæ, anastomosing together, assuming the appearance of vascular cords. The thickness of this fibrous layer becomes gradually diminished, forming at length a thin, transparent membrane, and finally disappearing in great part or entirely. In the midst of the intestines agglutinated to each other, we occasionally observe cavities, containing a liquid, clear and limpid, and at other times purulent. We sometimes remark in the substance of the false membranes, small collections of a concrete, purulent matter, analogous to tubercles; in other subjects there are real tubercles developed in the sub-peritoneal cellular tissue—sometimes whitish, puriform granulations, described by Bichat, Bayle, and M. Broussais. Perforations occasionally exist in the peritoneum, which, by extending to other parts, establish a communication with the exterior, through the abdominal parietes, or with the intestinal cavity and even the bladder. These communications are in the form of narrow, sinuous, oblique canals, so that the effused fluid may easily flow out, but returns with difficulty.

In epidemic peritonitis we often meet with lesions in other organs, as pus in the veins of the ovaria and uterus, the latter being softened and interspersed with small purulent collections; sometimes a gangrenous odour is exhaled, and the ovaria are limpid, red and brown,

or grayish, and softened to a pulpy mass. Gangrenous patches are sometimes observed about the neck of the uterus, or in the vagina, and not uncommonly we meet with pus distributed throughout the peritoneum, or collected in masses. Lesions are not unfrequently found in remote organs, as the lungs, pleura, &c.; these vary according to the genius of the epidemic, and the previous condition of the patient.

It was believed, for a long time, that the fluid effused in the peritoneal cavity, was of the nature of a *milky deposit*. Mercuriales, Willis, Puzos, Levret, Selle and Doublet, have supported this opinion, which is based, however, only on external appearances, the fibrinous portion bearing a strong resemblance to the caseous part of the milk; a similar matter was known to exist in cases of peritoneal inflammation, both among men and children, and yet it was regarded as milk, and the cause of disease. The doctrine of milky deposits has been generally abandoned, since the experiments of Bichat on the serous membranes. These experiments have been repeated with the same result, by Laennec, Bayle, Dupuytren, Deserin and Gasc in France, by Pearson and Davy in England, and by Jaquier and Kastner in Germany, and the theory of milky metastasis is consequently exploded. Analysis shows that the liquid part of these serous effusions bears a close analogy to the serum, and the solid portion is composed of fibrine with a small proportion of albumen. Saccharine matter exists in all kinds of milk, but none has ever yet been discovered in the effusions under consideration. The deleterious properties of this effused matter are well known—no wounds are so uniformly dangerous as those received in examining the bodies of women who die of this disease.

Prophylaxis.—The prophylactic treatment of a disease depends essentially on an exact knowledge of the causes by which it is produced. Proper diet, pure air, a mild temperature, a bed not too heating, a regular state of the bowels, cleanliness, diluting drinks; these are the principal means to be regarded during the puerperal state. Delaroche attaches great importance to the use of lavements after accouchement, in preventing the formation of puerperal fever; others with more doubtful propriety recommend laxatives. Blood-letting has also its advocates as a preventive of this disease, but it is to be employed with the greatest caution, and only in cases of palpable necessity. It has been said that those women who nurse their children are less exposed to this disease than others, but, according to our author, such require as much care and attention as those who do not nurse. Nothing is more important than a well-ventilated apart-

ment. The danger of crowding a large number of patients, especially of puerperal women, is too well known to need but a bare mention of the fact.

Treatment.—As there have been great varieties of opinions respecting the nature of puerperal peritonitis, so these have led to as great a difference of treatment. Some authors have recommended antiphlogistic remedies, others have prescribed emetics, or purgatives and sudorifics. Some have had recourse to tonics and antiseptics, others place their chief dependence on revulsives; many have adopted methods of treatment which they have regarded as specific—oil of turpentine, subcarbonate of potash, and the different mercurial preparations. From hence we conclude that the disease either presents itself under various conditions and aspects, or that we are yet but little advanced in what regards its therapeutics. Both of these suppositions would appear to be well-founded. In some epidemics, the same fatality has followed directly opposite modes of treatment. At the hospital of Vienna, in 1795, JAEGER says that not one cure was effected, though various remedies were employed.

Sanguineous evacuations.—From the days of Hippocrates, who was an advocate of bleeding in this disease, to the present time, the medical world has been nearly equally divided respecting the propriety of this agent. The truth is, that as in other diseases, so in this, there are cases where bleeding is highly useful and indispensable, and also where it proves injurious and even fatal. In sporadic peritonitis from external causes, blood-letting is the most useful remedy we can employ, proving more efficacious in proportion as we resort to it soon after the attack of the disease. HULME, DENMAN, LEAKE, and LEGOUAIS imagine that bleeding is not proper after the first period of the disease, embracing the first twenty-four hours. There is certainly no disease in which the stages succeed each other so rapidly as in this, and in which the first period is so short. Moreover when the inflammation has reached a certain extent, several stages are to be passed through which are indispensable to the reëstablishment of health, and to do this, nature requires strength. If we impair the vital forces when we cannot change the progress of the disease, we bring the patient into a dangerous state. This remark is applicable to bleeding, after the first stage is past, and should not deter us from using the lancet in the commencement. The second period is moreover characterized by the existence of an unnatural effusion. At first the serous membranes pour out an abundant serous exhalation, not differing from that of health, but this becomes absorbed, and its place occupied by a fluid of very different qualities.

It has a turbid appearance, is mingled with fibrinous particles, and often resembles pus. Now, if sanguineous evacuations have not arrested the disease in its first stage, if we repeat them, we favour the absorption of this fluid, which becomes more dangerous, as the system is enfeebled. This effect of bleeding, taught by Van Swieten, has been demonstrated by the experiments of Magendie. It is objected that the absorption of this fluid is necessary to health; granted; but does it hence follow, that it is proper to favour this absorption, when the entire organism is in such a disordered state as to endanger the life of the patient. If it take place at a later period, the system will have power to throw it off by the excretions and critical deposits in proportion as it is taken up. As to the period, beyond which bleeding is not to be used, no specific rule can of course be laid down which will be applicable to all cases. Instances may occur, when venesection may be proper, even several days after the invasion of the disease, and we are not therefore to be governed by a rule, which limits us to certain hours. A pleuritic affection may set in several days after the invasion of the peritonitis, which may demand the loss of blood. In forming an opinion, therefore, of the expediency of this remedy, we must take into view the general strength of the patient, the stage and intensity of the disease, its rapidity; and all those symptoms which denote acute peritoneal inflammation, remembering always that the earlier it is resorted to, the more benefit we may expect to derive from it.

As to the quantity of blood to be drawn, as a general rule it should be large, sufficient in fact to arrest the progress of the disease *in limine*, and thus prevent its reaching the second period. We shall be convinced of the necessity of this, when we consider the violence with which the disease commences, and the extent of the inflamed surface. Dr. Gordon recommends the abstraction of from twenty to twenty-four ounces in the beginning of the disease, having found that when this was practised early the patient generally recovered. In regulating the quantity drawn, we should regard the constitution of the woman, and whether she has been injured by a severe pregnancy, privation, antecedent disease, or by hæmorrhage. Care must be taken not to be deceived by the extreme frequency and smallness of the pulse, as these are characteristics of the disease; and it will be found to become more developed, and to lose its frequency after sanguineous evacuations.

In sporadic cases, blood-letting promises more benefit, than when the disease prevails epidemically, when it is to be employed with more caution. As to the expediency of repeating the operation, if the pulse

should continue corded and hard, and has not increased in frequency, it will be adviseable after a few hours again to have recourse to it, but if after the first bleeding, the pulse becomes more frequent, soft and smaller, and at the same time the pain and swelling of the abdomen increase, we should be particular not to repeat the evacuation. Some authors have attached much importance to the appearance of the blood, as furnishing a sure indication to govern us in the use of the lancet.

But the grayish pellicle of the blood observed in peritonitis, is common to the puerperal state, and is not therefore characteristic of puerperal fever. The state of the pulse and abdomen are the only guides on which we are to depend. Some practitioners prefer leeching or cupping to general bleeding, as not causing so great debility, and as abstracting the blood from the capillary system, taking it directly from the diseased organ, by the communications existing between the skin and subjacent parts.

In the majority of cases, bleeding from the arm is preferable to leeches, as we can better regulate the quantity of blood drawn, and as the advantage of revulsion which they are supposed to effect, is generally counteracted by the cold which accompanies their application. If bleeding is indicated, drawing blood from the arm, does not favour the development of adynamia, any more than leeches, if on the other hand, it is contraïndicated, leeches will be less injurious than general bleeding. If pain and tenderness remain, in one or more points of the abdomen, after an abatement of the symptoms, then leeches can be applied to advantage, but they should be employed in sufficient quantity to produce the desired effect. Sanguineous evacuations should be accompanied with emollient, diluting, acidulated drinks, such as the infusion of marsh mallows, barley water, flaxseed tea, gruel, lemonade, &c. &c.

Emetics.—The employment of emetics in this disease, has been advocated by Willis, White, Hulme, Leake, Stoll, and Finke; and all our readers, probably, have heard of the famous *method of Doulcet*, physician to the Hôtel-Dieu, who received a handsome remuneration from the French government in 1782, for his success in combating puerperal diseases. This consisted in the administration of fifteen grains of ipecacuanha on the appearance of the first symptoms of the disease. This dose was repeated at an interval of an hour and a half, and followed by a potion, composed of two ounces of the oil of sweet almonds, one ounce of the syrup of mallows, and two grains of Kermes' mineral. If necessary this course was repeated. This he maintained, prevented the *deposit from forming*, and thus

preserved the life of the patient. On this plan, out of more than two hundred patients, attacked with this disease, only five or six died.

It was not long, however, before this remedy, like many others, was found to prove unsuccessful, and during the months of November and December 1782, as many as six and seven a day died of peritonitis at the Hôtel-Dieu, notwithstanding the greatest care in the administration of the pretended specific. Doublet is a decided partizan of this mode of treatment, and Hufeland has prescribed it; our author however says, he does not remember a single case in which he could attribute success to it. He does not, however, subscribe to the opinion of Boisseau and Broussais, that it should be entirely proscribed, but would recommend it whenever the tongue is thick, pale, humid, and covered with a thick, yellow or green paste. It then should be employed, rather to combat an accidental complication, than to subdue the peritonitis itself. Cases are detailed to prove the efficacy of *Doulcet's method*, but they establish no general conclusion as to the success of this mode of treatment, and as for ourselves, we impute whatever success may have attended it, to the revulsive movement in the economy occasioning a change in the deranged functions, and equalization of excitement and distribution of the fluids. We regard it therefore, as occasionally a useful adjuvant to other means.

Purgatives.—These ought never to be regarded as the principal agents in the cure of peritonitis. They are useful only as auxiliary means, and as such, are recommended by White, Puzos, Hulme, Denman, Stoll, Chaussier, Gordon, Hey, and others. We often find sanguineous evacuations followed by little or no benefit, until the alvine contents are freely evacuated, when frequently we observe a marked amendment in all the symptoms. It is objected to purgatives, that they add to the peritoneal inflammation by their irritation. This fear our author pronounces to be entirely chimerical, as each tissue possesses a proper vitality of its own, and has its own particular irritants. Nothing, he observes, is more common, than to observe the muscular and mucous membranes in a perfectly sound state; while less than half a line distant, the peritoneum is the seat of a profound alteration, red, covered with pus, and even affected with gangrene, and *vice versa*. Others regard the existence of diarrhœa as a circumstance contraïndicating the use of purgatives. This objection is pronounced to be more specious than real. In the same proportion that an abundant diarrhœa is one of the most alarming symptoms of puerperal peritonitis, is a moderate diarrhœa advantageous. When the case terminates fatally, the critical evacuation is insufficient, from the severity of the disease. The beneficial action

of purgative remedies in peritonitis, may be attributed to their revulsive effect, or derivation on the mucous membrane of the intestinal canal.

The particular cathartics recommended are, castor oil, rhubarb, magnesia, sulph. soda and potash, calomel, &c. Lavements are to be used as auxiliary means.

Sudorifics.—These are considered of very little importance in the treatment of child-bed fevers, and their employment inconsistent with answering other indications. When occurring spontaneously, perspiration should be considered as critical, and by no means to be disregarded. Warm diluting drinks are the only internal remedies of this nature recommended by our author. Stimulating diaphoretics are by all means to be avoided.

Tonics and antiseptics.—In an epidemic peritonitis, which prevailed at Lyons, 1750, M. Ponteau administered large doses of camphor with extraordinary success. He regarded the inflammation as of the erysipelatous kind, and necessarily requiring tonic remedies. He gave it in the form of an emulsion, with oil of sweet almonds, water and syrup, adjusting the dose to the exigencies of the case. Since then, it has been employed with success in Austria, by Burserius, and in France by Doublet and Delaroche, combined with bark. To these authorities in favour of tonic remedies, we may add Storck, Fauken, Leake, White, Kirkland, John Clarke, and Hamilton. Delaroche remarks—

"It is in a city like London, where certainly inflammatory diseases tend rapidly to gangrene, and particularly in extensive hospitals, that I would wish prudent and enlightened practitioners to test this method; and I am much deceived, if they do not obtain sufficient success to warrant a repetition of it."

It is therefore in *epidemic puerperal disease* alone, that camphor and bark have been employed successfully—where the disease is owing to an alteration of the fluids, and to the absorption of deleterious miasmata. In such cases, there should be administered at the commencement of the disease, and in sufficient quantities, repeated at proper intervals. Twenty grains of camphor in the first half hour are often required. Quinine at the present day is a preferable form.

Blisters and other cutaneous revulsives.—Blisters are rarely employed at the present day in the treatment of puerperal peritonitis.

"It is very certain," says John Clarke, "that in this disease, they augment the irritation to a surprising degree, and render the pulse more frequent than it was before. They appear to diminish for a short time the painful sensation; but this relief is only momentary, and is not sufficient to authorize their use, because their bad effects counterbalance any advantage we may expect to de-

rive from them. In one case, an application of blisters on different parts was proposed, and the patient recovered; but a similar treatment in other instances, far from producing the same effects, destroyed all the hopes inspired by the success of one particular case."

With this opinion, DELAROCHE and RECAMIER, who employed them extensively at the hospital of St. Louis, fully coincide, and our author rejects their application to the abdomen, thighs, or elsewhere, during the first period of the disease. They may be useful after effusion in promoting absorption. Sinapisms are of little use. Warm cataplasms of flaxseed to the feet and legs, and an envelope of warm flannel, are highly proper as revulsives.

Cold affusions.—This was introduced into practice at the Hôtel-Dieu, by SIGAULT, after all other means had entirely failed, but without any great success. Hufeland recommends the application of cold to the abdomen, when there is considerable tumefaction; but our author would only advise recourse to it when other remedies had failed, or as adjuvant to other means.

Our author treats of the use of the subcarbonate of potash, and the oil of turpentine in this disease; but as the results obtained from their employment are thus far unsatisfactory, we pass on to the consideration of,

Mercurial preparations.—These have been employed for a long time in the treatment of inflammatory affections. In 1764, Robert Hamilton prescribed them with success in hepatitis, pleuritis, and fevers of lying-in women. The honour of introducing into France the mercurial preparations, as the principal means of treatment in puerperal peritonitis, belongs to Dr. VANDENZANDE, Professor in the Hospital of Anvirs. He commenced in the acute stage, combining opium and henbane with calomel, and giving it in such doses as to cause salivation as speedily as possible; where this was attained, a speedy cure was generally the result.

"On the first day," he observes, "we prescribe twelve or fifteen grains of calomel, with an equal portion of the extract of henbane, and if judged proper, one or two grains of opium. Fomentations and demi-lavements, of the decoction of poppy heads, and the bark of mallows or flaxseed, repeated every three or four hours, are so many emollient sedatives, which are carried to the nearest possible point of the seat of the disease; they moreover have the advantage of preventing frequent intestinal evacuations, provoked by the calomel, as well as by the vomiting so difficult to arrest. We continue this medication until the pains are notably diminished, which scarcely ever occurs before the third day, and the state of the pulse and febrile symptoms indicate resolution. This last is almost always announced as we have already remarked, by a slight swelling of the gums, and the other marks of approaching salivation."

For calomel, mercurial frictions are sometimes substituted, or em-

ployed as auxiliaries, especially in cases of obstinate diarrhœa or vomiting, using from ʒij. to ʒiv. during the day.

Since the publication of the memoir of M. Vandenzande, mercury has been extensively employed in France, in the treatment of puerperal diseases. Its use has been generally preceded by sanguineous emissions. Baudelocque remarks, that he has witnessed the good effects of this plan of treatment in cases which appeared desperate, but that more frequently, it happened that the patients died without any indication of salivation, after having used several ounces of mercurial ointment and several drachms of calomel. According to his experience, salivation is a certain indication of convalescence, though cases are detailed in the medical journals, in which death occurred notwithstanding its development. After effusion has commenced, mercury is decidedly advantageous in arresting that change in the fluids consequent on the absorption of the effused fluid. In puerperal epidemics, where blood-letting is injurious, calomel may be combined with camphor and quinine. As the black oxyde of mercury acts more rapidly on the salivary glands than any other preparation of this metal, it may be substituted for them. The modus operandi of mercury is as yet involved in doubt. While Hufeland, Richter, &c. maintain that it has the property of diminishing the *plasticity* of the blood, others regard it as a direct debilitant—by some its action is resolved into pure revulsion, by others into an excitant of the lymphatic system. All we know however is, that analysis has detected it in the blood, lymph, and glandular secretions, thus confirming the researches of Fourcroy, Dumeril, Orfila, and Cruveilhier, who detected mercury in the bones, in the cerebral mass and the nerves. Salivation is to be considered merely as an indication of mercurial action on the economy.

Auxiliary remedies.—Warm baths.—Though theory appears at first view favourable to warm baths, from their usual tranquillizing and relaxing effects, still they rarely, if ever, prove useful in peritonitis. The pain in this disease is so intense, that the slightest motion augments it, and the patient generally finds her sufferings increased while in the bath. To this is added the danger from exposure to cold air and other accidents usually encountered. They are absolutely dangerous, when there is great difficulty of respiration and considerable inflation of the abdomen. Cataplasms, fomentations and injections are useful auxiliaries in the treatment of peritonitis, and should never be neglected. Cataplasms of flaxseed meal, rice, or bread, with a decoction of mallows, poppy heads, &c. applied over the abdomen are highly beneficial, when the sensibility is not too

great to support their weight. We may in some cases substitute for them with advantage, narcotic fomentations, mercurial frictions, an ammoniacal camphorated liniment, or the oil of turpentine. Dr. Gooch assures us, that since he has employed cataplasms of flax-seed, placed between two napkins, and applied to the entire abdomen, puerperal peritonitis is no longer regarded as contagious or even serious. Our author thinks it very clear, that Dr. G. knows very little about puerperal fever, and will soon have to abandon an opinion not in accordance with experience. Where there are shreds of putrefied placenta remaining in the uterus, injections of a decoction of barley, mallows or quinine will be proper. Repose of body and mind are of the greatest importance. If diarrhœa attends and is immoderate, rice water, sweetened with the syrup of quinces and the white decoction of Sydenham, may be given, and if it prove insufficient, an opiate should be added. Cases attended with an obstinate vomiting of a brown, greenish matter, are usually desperate, and should be combated with carbonated waters, cold drinks, blisters, opiates, &c. In excessive inflations of the abdomen, camphor combined with nitre, or given in lavements in the yellow of an egg, has been used with some success, also magnesia and lime water, cold fomentations, the application of ice, and finally mechanical means. Where extensive effusion exists, an operation may sometimes be adviseable to evacuate the fluid, though absorption is the most advantageous method. In chronic peritonitis mercury is particularly useful. In convalescence the patient should use a light nourishing diet, together with some bitter decoctions, especially quinine.

We have thus given a condensed summary of M. Baudelocque's work, aware of the disadvantage of not being able to present our readers with a detail of cases illustrative of our author's principles and mode of practice. Those, however, who wish to become better acquainted with the etiology and treatment of this hitherto mysterious disease, will doubtless avail themselves of the work, of which we have given an imperfect analysis, as it contains a faithful summary of our knowledge of this affection up to the present time. The indefatigable translator deserves our thanks for the able and accurate execution of his task, and if in some instances greater elegance of expression might have been attained, yet we cheerfully yield this consideration to the greater excellence of truth and faithful adherence to the original. C. A. L.

XI. *An Account of some of the most Important Diseases peculiar to Women.* By Robert Gooch, M. D. From the Second London Edition. 8vo. p. 326. Carey & Hart, 1832.

It was observed by Dr. Watts in his work upon the mind, that it is necessary for the clear and entire comprehension of an author to make oneself first acquainted with his preface and conclusion. Whatever objection may be made to the universal applicability of this precept, is is certainly well suited to the book and author before us. Dr. Gooch was for a long period of years a highly respected practitioner of the obstetric art in the city of London, and enjoyed much reputation as a public teacher on the same branch in St. Bartholomew's Hospital. The conclusion of his career, for he has recently died, was in keeping with the prior part of his life. To the last he was a most intelligent and observing practitioner of his favourite branch, and physically as active in the performance of its duties, as his habitually infirm health would allow. Perceiving at an early period the vast importance of observation and reflection, and indeed their indispensibility to the formation of a good practitioner, his attention would seem to have been strongly directed towards seeing and acting for himself. Not, however, eschewing books entirely, but sacrificing in them what unfortunately seems to be considered by too many their chief utility, the using them as a means of saving themselves the trouble of reflexion and observation, by reading the sentiments of others. No individual certainly, ever became *successful*, in the *legitimate* meaning of the term, or truly eminent, in any department whatsoever, who did not consider what had been recorded by his predecessors, more as precious materials, affording the highest incentive to subsequent exertions, than statutes fixed and unchangeable like the great physical laws of nature. Books, however, must be to all of the most unquestionable utility, inasmuch as they might prevent the misapplication of much useful time, in a new attempt to establish facts already sufficiently substantiated, and to which every observer would be liable in his initial exertions. Through the medium of books, the course of science is maintained in one uninterrupted and expanding stream, like a mighty river, which begins at a humble fountain, and accumulates in force and quantity by the successive addition of small currents which flow to it from every direction. The course of science, like the stream, is a single track. He who would conduct along it human minds, is bound to take up the voyage, not at where others have started or passed by, but if possible where the last successful

explorers had left off. Without perusing the charts, which such had left behind them, many would most probably spend their lives in fruitless exertions, and perhaps reach no further on the course. Books therefore are necessary to all, as the focus into which is concentrated all the knowledge that is developed in the different regions of the globe: to him who is unwilling to take the trouble to reason deeply for himself, the only source of human knowledge beyond the superficial indications of the external senses.

With equal power and will for reflection and observation, the enjoyment of superior opportunities will enable some to surpass others in usefulness. Such, we allude to those who hold stations in extensive hospitals and infirmaries, or in large cities as extensive practitioners, owe an important debt to the profession and the public generally, which all are not sufficiently anxious to discharge. Let us on this subject observe what is said by Dr. Gooch in his preface, which is characterized by the possession of much of that useful material good sense.

"I was formerly physician to the two Lying-in Hospitals of Westminster and London, and Lecturer on Midwifery at St. Bartholomew's Hospital, and I have for many years been extensively employed in the practice of obstetric medicine; thus I have had the best opportunities of acquiring a practical knowledge of this branch of our profession, and the strongest motives for collecting and arranging it into a shape suitable for communication. I do not say this in a tone of exultation, for I have little reason; on the contrary, the thought of the opportunities I have enjoyed is always accompanied with the painful reflexion, how imperfectly I have used them. This has depended partly on not knowing their full value, when I first came into possession of them, but chiefly on a course of ill health; and I write this preface, principally to persuade those who come after me, to turn their great opportunities to a good account. If I knew a young man placed in such a station, in whose eminence founded on his professional utility, I felt interest, I would say to him, remember that your station is one that can be enjoyed by a very few; do not consider it as one of lucrative conspicuousness, but as a trust which Providence has confided to you, and which you will neglect, unless you do your utmost to improve your branch of medicine. He who has the care of a lying-in hospital is a lecturer on midwifery, and is resorted to by the public as an obstetrical physician, has opportunities of acquiring knowledge in and extending the bounds of obstetric medicine, which no other surgeon, physician, or general practitioner can possess whatever may be his talents."

After encouraging the physician, most strenuously to observe and think, and take notice both of his cases and of what he reads, he observes—

"Make yourself perfect in the art of examining dead bodies; accustom your hand to open them, and your eye to detect with accuracy morbid appearances."

"Five years industriously spent in the way which I have advised, *provided you have a mind adapted to investigation;* will make you more competent to advise and act, in the difficulties and diseases of your branch of the profession than most persons you come in contact with, and than many a man far older than yourself; and after ten years so employed you will find yourself in possession of materials in a state fit to be produced, of various degrees of value."

The author has justly considered, that more real benefit would be conferred upon his readers, by his treating copiously and precisely of a few points, which had been too briefly or obscurely and inadequately described, than by hastily running over the whole round of obstetrical science, as is too frequently done in the systematic works of medicine. In so doing, too, he enjoys the advantage of selecting his topics, and would naturally be disposed to take up those of which his observation and reflexion best qualified him to speak. What he has adduced, he says, "I have not related from books, but from my own personal experience; even in the most common-place parts I claim to be more than a compiler." From the preface of this author, the reader will, we think, look with interest to the perusal of his book, with a well-grounded expectation of being rewarded for his labour in the only coin current in the present improved state of the profession, well observed facts, and sound deductions from them, by one conversant with the physiological laws of the system.

The first subject of which he treats, is that very important one, so interesting to the physician from its occasionally extreme mortality, and the mystery connected with its epidemic prevalence in the best regulated institutions, puerperal fever, or puerperal peritonitis. Our author designates this by a new name, *the peritoneal fevers of lying-in women*, which he thinks a better name, inasmuch as it expresses the fact—"that an affection of the peritoneum is an essential accompaniment of the disease, without defining what that affection is, because it is not uniform."

This term, which is so expressive in many respects, strikes at first unpleasantly upon the ear of the semeiologist, but is the most appropriate one yet applied, when we consider it as an elliptical phrase, implying inflammation of the peritoneum, exciting the action of the heart and arteries, and producing fever. At all events, it stands upon equally fair ground with the epithets of gastric and mucous fevers, sanctioned by the distinguished French physiologist, Professor Boisseau. The author, before proceeding to trace the history of this disease, from the works of all those who have written upon it for the last half century, furnishes a detailed account of it; he adds in a note, that Dr. Lowther, from a rigid examination of the best authors, and

from comparing their pathognomonic symptoms with his own experience, found that they were very few, which could be admitted in an accurate definition of the disease, "fever, intense pain of the head, and intense pain of the abdomen."

In this character of chronicler, he gives a summary view of the opinions and practice of the different English practitioners down to the year 1793. Supposing that each of these observers had been accurate in his observations, and honest in his reports, the author, from the investigation of the conflicting accounts of these writers, comes to the conclusion—

"That puerperal fever, by which I always mean that fever which is accompanied by an inflammatory state of the peritoneum, is not one uniform disease, but may occur under different forms. That sometimes it is so mild, as to be curable by the gentlest aperients, and at other times it is very obstinate and fatal. That in this latter form, it sometimes consists of acute inflammation of the peritoneum, with inflammatory fever, which bears, and is curable only by early and active depletion, sometimes of inflammation and fever of a low type, in which depletion is useless and even injurious."

Among all these practitioners, this disease, in its severe form, was found to be peculiarly intractable and mortal. About this time, however, a new practice was pursued by some zealous and able physicians on the continent of Europe, which was stated to be almost infallibly successful. This consisted chiefly in the administration of emetic articles, especially Kermes' mineral, and the success depended upon their being given at the moment of attack. The practice of M. Doulcet, which particularly attracted the attention of the Royal Academy of Paris, on account of its success, was as follows:—Fifteen grains of ipecacuanha, were divided into two doses, one of which was given at the *moment of attack*, and the other an hour and a half afterwards. It produced vomiting and purging. The latter effect was subsequently maintained by a potion, made with two ounces of oil of almonds, one ounce of syrup of marsh mallows, and two grains of Kermes' mineral. This medicine was given daily, until the symptoms of the disease subsided. But in what doses we are not told. M. Doulcet, "from losing every patient, now lost none. During four months, four hundred were cured; five or six refused to take the medicine, and all these died." Dr. Baer, of Vienna, likewise pursued an antimonial practice, with the most satisfactory success, as appears from a long and very interesting extract taken from that author.

The practice of M. Doulcet was tried in England; but not as Dr. Gooch seems to insinuate, exactly in the manner of its originator. Dr. Walsh said it was infallibly successful; Dr. Denman that it was

eminently useful; Dr. Lowder that it disappointed him; Dr. John Clarke that it was injurious; and it soon fell into disuse.

The author now turns from an inquiry into the practice of physicians of the last age, to scrutinize that of some of his contemporaries. The eminently successful practice of Dr. Armstrong and Mr. Hey, which each was finally obliged to adopt, on account of the great mortality which followed the usual modes of practice, is universally known to the profession to have consisted in *copious bleeding, immediately succeeded by copious purging*, employed before the period of collapse, which usually succeeded in from twenty to seventy hours from the commencement of the attack. Though there were no dissection made of any of the cases attended by these writers, Dr. G. concedes from the symptoms and course of the disease, that these were true cases of peritoneal fevers. He is also of the belief, that the practice they pursued, is the proper one in puerperal epidemics of the character they have described. But he is far from believing, with a great number of physicians, that theirs was the only genuine and immutable form of the disease; and that their practice is the only appropriate one in all cases of the disease. He dissents from the grounds which Dr. Armstrong assumes, that symptoms and dissections were to decide, whether the low epidemic fevers of child-bed were or were not produced by inflammations of the peritoneum: the effects of remedies, he says, forms not only an essential, but the most important part of the history of the disease. "Symptoms and dissections can never do more than suggest probabilities about the nature of a disease, and the effects of a remedy on it. A trial of the remedies themselves is the only conclusive proof."

This doctrine, which we believe rather antiquated and erroneous, is, no doubt, the result of the bias, which even acute and penetrating minds feel, from the peculiar character of their early studies, which they are never after, whether right or wrong, wholly able to forget.

This tentative mode of forming a diagnosis by the administration of remedies, is now no longer taught, however much it may be practised. A correct knowledge of the action of the organs in health, of etiology and pathology, furnish, it is believed, the only legitimate aid, to indicate the nature of disease, and what process of therapeutics it is necessary to employ in its treatment.

The next question to be treated of, the author observes, is whether the opinion so generally entertained, be correct, that puerperal fever consists always of an acute peritonitis, to be remedied by rigorous and repeated depletion, at the very onset of the disease, in the manner

of Armstrong and Hey. This, consistent with his professions in his preface, he proposes to solve by his own experience.

Shortly after his appointment to the Middlesex lying-in hospital, the seasons became unhealthy, and puerperal fever prevailed epidemically, both in and out of the institution. It wore the aspect of acute peritonitis in all cases, and dissection of the fatal cases always exhibited this lesion, with copious effusions of turbid serum, lymph or pus. In some cases there were inflammation and even purulent secretion in the substance of the uterus. The disease was characterized by a very sudden commencement generally.

"After being quite well, feeling no sense of illness, or at least making no complaint, the patient was seized at once with chilliness or shivering, and pain in the belly, and the pulse rose to 120 or 130. But sometimes the attack was more gradual. For many hours, or even for a day or two, there were pain and tenderness in one part of the abdomen, then in another, with long intervals in which there was no pain any where; and during all this time the pulse would remain quiet or not quicker than 80 or 90. In short, the disease would have an incipient stage, but this was not a common occurrence."

There was invariably a great degree of tenderness in the abdomen, and generally, though not always, a marked distention. In some of the worst and fatal cases, there was no gaseous effusion within the intestines, upon which the tympanitic state depends. The absence of this characteristic symptom of the complaint, obscured at first the nature of the evil. Dissections, however, confirmed fully, the suspected highly-inflamed condition of the peritoneum.

Among the *out* patients Dr. G. was frequently not called to the case, until after the two or three first days of the disease had elapsed. In such cases he seldom or never saved them. The sunken countenance; small, weak pulse of 140 or 160; the tympanitic belly, and short breathing, indicated a fatal disease, past the reach of depletion. Cordials were so unsuccessful, that he says,—"though they appeared to promise the only chance of recovery, wine mixed with gruel, or egg for diet, and diffusible stimulants for medicines, were almost signals for fatal termination." The first day of the existence of the disease he found to be almost the only probably remediable period. The first and most important object in this disease appeared to be that of seeing the patient immediately after the commencement of the attack; to the neglect of this, and to the delay in the employment of effective measures, half the mortality in this dreaded disease is owing. Suffice it to say, that in his treatment, Dr. Gooche adapted a much similar practice to that so ably promulgated about the same period by Dr. Armstrong. Venesection instanter, *ad deliquium*,

followed by a large dose of calomel, and that again by doses of neutral salts. If the pulse subsequently raised within a few hours, the bleeding and cathartics were repeated again until it was fully subdued. If soreness or tension of the abdomen still remained, leeches were applied, *to empty the gorged capillary vessels of the part*, and after these a bag large and long enough to cover the whole abdomen, was stuffed with hot poultice, and laid over so as to keep up heat and moisture upon the surface. All these measures, and others such as the necessities of the case required, were repeated from time to time, and the manner of their administration is rendered more useful and intelligible by a number of very interesting cases, which the author has adduced. When he saw the disease early, this practice was commonly successful. It was so very decided, as he observes, "that if it had not been very right, it must have been very wrong."

So far the experience of Dr. G. seemed to confirm the sanguine hopes, entertained a few years ago by the profession, that all the peritoneal fevers of lying-in women are of an acute inflammatory type, to be cured only by early bleeding and purging. So far the problem as to the nature and treatment of the disease had been successfully solved. But this mathematical and definitive mode of coming to rigid conclusions is but illy-suited to the study of the human system either in health or disease, where so many organs inhabit like so many different individuals, one tenement, each of which has respective functions to perform, and are susceptible of being influenced at different times in very different manners. The physician who closely scrutinizes the different organic functions of his patients, when the equilibrium is destroyed by disease, must notice their fluctuating state of action, varying almost at every repetition of his visit, in their degree of action, like the scales of a balance. The fallacy of this mode of reasoning, and the fallability of experience, was a few years subsequently, sufficiently demonstrated to Dr. Gooch. Dr. G. observes—

"The most remarkable circumstance which the experience of the last few years has taught us about peritoneal fevers, is that they may occur in their most malignant and fatal form, and yet leave few or no vestiges in the peritoneum after death. The state of this membrane, indicated by pain, and tenderness of the abdomen, with a rapid pulse, appears to be not one uniform state, but one which varies so much in different cases, that a scale might be formed of its several varieties. This scale would begin with a little more than a nervous affection often removable by soothing remedies, and when terminating fatally, leaving no morbid appearances discoverable after death. Next above this, a state in which the nervous affection is combined, with some degree of congestion, indicated in the cases which recover, by the relief afforded by leeches,

and in the cases which die, by slight redness in parts of the peritoneum, and a slight effusion of serum, sometimes colourless, sometimes stained with blood."

Above this in the scale, the author places the acute inflammation of the peritoneum. Though this theory seems not entirely satisfactory, the treatment and dissection of the cases which led to this belief well deserve the closest attention of the practitioner, and for which alone it would be worth his while to purchase this book. The griping action of a cathartic, severe after-pains, seemed sometimes the cause of the affection; at other times, no apparent cause could be assigned.

According to the plan of Dr. G. many cases are detailed to illustrate the varieties which occurred in his practice. This form of peritoneal fever presented the ordinary symptoms of the acute form—pain and tenderness of the abdomen, with a rapid pulse, which had not however the hard and wiry character of the latter. It was much shorter in its duration. The peritoneum after death was pale and healthy, and the chief morbid appearance was a little turbid serum effused into the abdomen. It occurred usually in persons of nervous and relaxed temperaments. From its semblance to the acute stage, many practitioners were betrayed into the impropriety of copious venesection, which never seemed to benefit the patient, but in most instances was decidedly injurious. Opiates, Dover's powders, gentle aperients, fomentations over the abdomen, and when the latter did not allay the soreness, leeches followed again by fomentations to the abdomen. In doubtful cases, when the accumulated experience of Dr. G. was unable to decide, from the weak or hysterical temperament of the patient, and the soft though rapid pulse, leeches were applied to the abdomen at first, consonant with the exhibition of the opiates. When blood was drawn from the arm, it never in these cases presented the inflammatory crust, thus affording another important aid, in the establishment of the diagnosis. This assuaging treatment was almost universally successful.

Of the several fatal cases which the author adduces, when the common active treatment for puerperal peritonitis was adopted, and which *seemed* too to be indicated by the symptoms, and which he believes might have been saved by the opiate treatment, we will quote the following:—

"A practitioner sent for me to see a patient, of whom he gave the following account:—She was habitually delicate and subject to hysteria. After an easy labour of her eighth child, her after-pains had been long and severe, but her pulse was not quick. At six in the evening of the second day it was soft and

under 80. At five o'clock next morning, the practitioner was called from his bed, and found her complaining of great pain and tenderness over the whole abdomen. She had been vomiting; her pulse was quick, but small and weak, and her skin temperate. He immediately bled her, letting the blood flow till she fainted. He next gave her five grains of calomel, and soon afterwards a dose of salts and senna, which she vomited. Two hours after the first bleeding, the pain not having been relieved, he bled her again to fainting. Twelve leeches were applied over the abdomen, and a pill was given her, containing three grains of opium. Having received this account, I went into the chamber of the patient. Her face was ghastly; it was difficult to keep her out of a fainting fit; her skin was cold and clammy; and her pulse so quick, small and fluttering, that it could not be counted. I took off the leeches, and endeavoured to revive her by warmth and cordials, but she died in the evening, about six hours after my visit, and about thirty from the beginning of pain. The body was opened next day. The peritoneum was healthy but pale; there were between one and two ounces of colourless serum in its cavity; the abdominal viscera were all healthy but pale; the uterus was contracted in the ordinary degree."

If opiates and fomentations, instead of bleeding, had formed the treatment, the author believes the patient might have been saved.

It is from the fact that affections, different in their nature, and in the treatment which they require, have been located under the name of puerperal peritonitis, and the difference of the same in the early and late stages of the acute form, that we have such different modes of practice advised; the camphor and opium, bark and stimuli of some, and the depletion carried to its utmost extent of others. We are aware that we have dwelt longer upon this first subject of the author, than our limits and the importance of the following chapters would seem to justify, but we are convinced from some cases we have witnessed, that the experience of Dr. Gooch, in regard to the injurious effects of blood-letting and severe diet, in some cases of *apparent* puerperal peritonitis in females of nervous temperaments, deserves the attention of the profession. Dr. G. in consonance with his professions in his preface, treats more particularly of those forms of diseases which he believes has least attracted the attention of physicians. His next subject, is the *disorders of the mind in lying-in women*, and though he admits that they sometimes depend upon an inflammatory or congested condition of the brain, which he believes may be readily perceived, by the flushed face, hot skin, and high and febrile pulse, and which require active depletory measures for their cure; he is particularly occupied in the work before us, with those cases, where it depends upon an opposite condition of the system, and requires an opposite treatment, and indeed can only be cured by an anodyne and sustaining course. He says, indeed, "if I judge from my own experience, furious delirium from inflammation of the brain

is a rare occurrence in child-bed." Puerperal mania and melancholy he believes to be much oftener a disease of nervous excitement and debility. He has never known them consequent upon a suppression of milk, or from weaning of the child, though he would not deny the experience of others, who have asserted such to be the case, but in his practice the nervousness and debility had always compelled the female to abandon the attempt to suckle her offspring some time before the mental derangement was manifested. The digestive organs are generally disordered in these cases; in some cases so slightly as to be scarcely perceptible, but in others, marked by a thickly-furred tongue, offensive breath, and dark and offensive stools. In the latter instances, we would be induced from the beneficial effects of purges to think, that the disorder of the alimentary canal was the primitive cause of the mental alienation. Fortunately for females, puerperal mania is not a very usual complaint; Dr. W. Hunter states, that during the whole period of his practice, he had witnessed but about twenty patients, and therefore the ten or twelve cases which Dr. G. has inserted in his work, may be considered as a fair representation of the disease, and not as a picked assortment to suit his peculiar views. These cases, and the author's remarks upon them, are of great practical importance, and a thoughtful and attentive perusal of them would well reward the practitioner. It was at one time thought, that the mental disorder of puerperal females never became fatal, and even Dr. Baillie remarked, that the question was not whether such patients *would* recover but *when*. But it has been Dr. G's lot to witness several such fatal cases, and he is induced to feel strengthened in his position, by a quotation from the manuscript lectures of Dr. Hunter, to this purport—that there are two forms of puerperal mania, one attended by fever, or at least by a rapid pulse, and which is generally fatal; and one attended with a very moderate disturbance of the circulation, in which the patients generally recover. Some which Dr. G. attended with a quick pulse recovered, but none of these were treated for paraphrenitis, but with anodyne aperients and mild nourishing articles of food. Dr. G. has met with some cases, of which he cites an example, the symptoms of which bore great analogy to delirium tremens, and were happily treated upon the same plan of practice consecrated to that complaint. Of the frequency of the occurrence of puerperal disorder of mind, it is difficult to determine, as the violent and unyielding cases are only consigned to the hospitals, from whence such estimates are usually derived. Its curability or the number of cases in which recovery takes place, from the same obvious reason cannot be readily determined.

From the statement of M. Esquirol, it appears that out of ninety-two cases fifty-five recovered and six died—of those which recovered thirty-eight did so in less than six months. Of eighty-five admitted into Bedlam, says Dr. Haslam, only fifty recovered, leaving thirty-five as the number of the incurable.

"I am persuaded," says Dr. G. "that such tables throw little light upon the question, and present a prospect unnecessarily gloomy and discouraging. Of the many patients about whom I have been consulted, I know only two who are still after many years disordered in their mind, and of these one had already been so before marriage."

According to the author's experience, the mania which occurs shortly after labour, is more easily remedied than the melancholy, which often ensues to the debility produced in nervous patients by suckling. For a good dissertation on the causes of this affection, and remarks upon its physical and moral treatment rife with the signs of wisdom and experience, we must refer the readers of this journal to the book itself.

This subject is followed by an interesting dissertation, entitled, "thoughts on insanity as an object of moral science."

"The mode of distinguishing pregnancy from the diseases which resemble it," forms the subject of his third chapter, and which from the importance of the subject, and the novelties of the author's manner, we will briefly notice. With all the systematic studies which the most zealous student practices, he will find in relation to this subject, much to be supplied by his own ingenuity and a constant need of the exercise of his good sense, to avoid the errors which among nurses, though themselves very subject to deception, is thought unpardonable. The familiar illustrations of a man of shrewd experience, as Dr. G. appears to have been, who adds additional gleanings to the harvest already garnered, is well deserving the study of the practitioner of obstetrics.

Having stated the ordinary symptoms of pregnancy, of which with all other writers he is disposed to place most reliance, on the areola which surrounds the nipple, except that positive one of the movements of the child, he states that the whole, with the exception of the latter, may be produced by other causes than pregnancy, and hence from reasoning, should not be in dubious cases confided in without the greatest caution.

"But," he says, "if the ordinary symptoms of pregnancy are so far from being infallible, what, it will be asked, is the result in practice? It is this; that although they are sufficient guides in most cases and under ordinary circumstances, yet they are often insufficient. One person is pregnant, who has no

right to be so, and obstinately denies it; another is pregnant who has no cause to be ashamed of it, but from some circumstance, reasonable or unreasonable, disbelieves that she is so. One thinks that she is pregnant merely because she is sick, another because she is not regular, a third because her belly swells, and a fourth because she wishes to be so; and these erroneous denials, and erroneous suspicions, are imparted from the patient to the medical attendant, and influence his conduct. Of these errors some are the result of ignorance or thoughtlessness, but some are committed by men of sense, experience, and attention."

To ascertain with certainty the state of things in these cases of doubt, two measures are proposed:—1st, to determine whether the enlargement of the abdomen depends upon an increase of the uterus; and if so, in the second place, whether that of the uterus depends upon its containing a fœtus. This can only be done by what is called the examination by touch. We have long been under the impression that the facility of determining this difficulty, by touching, was very much overrated during the early months of pregnancy, and we are confirmed in this belief by the admission of Dr. W. Hunter, who possessed both great experience and tact. He used to express himself thus, in his lectures in relation to this subject; "I find that I cannot determine at four months, I am afraid of myself at five months; but when six or seven months are over I urge an examination."

Dr. G. however believes that by the plan he practices it may be more readily accomplished. Having detailed the method of touch exercised upon the abdomen, he proceeds to lay down the course to be practised in the vagina. Four wood-cuts are given to illustrate to the eye the states of the neck of the uterus to be determined by the finger. There are three things to be observed:—

"The neck of the uterus, the state of its body, and the movement or rather the mobility of the fœtus. 1st. In the unimpregnated state, the neck of the uterus projects into the vagina about two-thirds of an inch, like a thick, firm, fleshy nipple. At the termination of pregnancy, a few days before labour, this neck is completely obliterated, the portion of the uterus which lies over the top of the vagina no longer projecting over its cavity, but forming a flat roof."

The obliteration begins about the seventh month, the neck becomes gradually softer, broader and shorter, so that the practitioner, if he have an opportunity of making an examination two or three weeks before parturition, finds only a soft short nipple remaining. But the period of obliteration varies at its commencement in different individuals.

"An anatomical teacher will show the preparation of a uterus in the fifth month of pregnancy, with an unshortened neck, and think the question settled by anatomical demonstration; but a uterus in a bottle is only one case, and

proves no more than the examination of a uterus in a living subject; and the examination of many has taught me, that the neck of the uterus is as much altered in some women at the fourth month, as in others at the sixth, especially in those who have had several children, in whom the neck yields more readily than in first pregnancies."

The next thing to be observed is whether the body of the uterus is enlarged.

"This may be ascertained by pressing up the finger between the neck of the uterus and the pubis; here in the unimpregnated state there is nothing but what is soft and yielding, but where pregnancy has advanced several months, this space is occupied by a large firm tumour."

By raising the tumour with the finger in the vagina, and depressing it with the other hand upon the abdomen, it may be told whether or not it is the cause of the abdominal enlargement. This method is applicable as early as the fourth or fifth month.

To decide in regard to the mobility of the fœtus, the patient must be placed in an upright posture, when the head of the fœtus floating in its bath of amniotic liquid, rests over the top of the vagina.

"If the practitioner," says Dr. G. "places his finger on the uterus just in front of the neck, and gives it a push, the fœtus will float for an instant, and the next instant fall with perceptible weight on the point of the finger; this sensation, if once felt, can never be mistaken; it is scarcely inferior in conclusiveness to the muscular movements of the child, and has this advantage over the latter, that it can be felt whether the fœtus is alive or dead."

Before the fifth or seventh month, however, the fœtus is too light to be felt, and at the late stages is often too closely impacted.

The author next proceeds to detail a number of interesting cases which occurred in his practice, to show the mode of applying these tests in the different kinds of cases, about which a practitioner is likely to be consulted. He first cautions the practitioner against believing too readily in the protestations of single women, to whatever rank they may belong, when they have evident symptoms of pregnancy, who will often obstinately "deny to the last that they *can* be pregnant, because they hope to the last that they *are* not so."

Of the cases selected by Dr. G. we will select the following—

"A genteel woman called on me one morning, and related to me the symptoms of her complaint, which were exactly those of pregnancy. She was healthy, had always menstruated regularly till seven months ago, when she suddenly ceased to do so, and about three months afterwards her abdomen began to enlarge. She was now about the ordinary size at the seventh month of pregnancy. As she had not told whether she was married, I asked her whether it was possible for her to be pregnant? She said 'certainly not' for she was not married. I then asked whether I should give her a mere conjecture about the nature of

her symptoms, or whether it was important for her to know it with certainty. I then told her there was only one way of determining it, which I explained. After a little agitation, she consented to an examination. I found the abdomen firm, the umbilicus prominent, the neck of the uterus nearly obliterated, its body enlarged, and I could make the fœtus float, and feel it fall heavily on the point of my finger. After a little pause, I told her as inoffensively as I could, that she was not only pregnant, but not more than six or eight weeks from the time of her confinement, and I then repeated my question, 'is it possible?' She *thought* not. She then told me she was privately married, that it was of the utmost importance it should be kept secret, and that her husband had assured her, and she was sure believed himself, that if he avoided injuring the hymen, it was impossible for her to become pregnant. Whilst examining the vagina, I had noticed that the membrane was imperfectly torn."

The event proved Dr. G. to have been right.

The author next takes up the subject of spurious pregnancy, and details some instructive cases, where "a torpid state of the uterus and a flatulent state of the bowels," had produced symptoms so resembling pregnancy, as to deceive even competent judges for a considerable time. The celebrated case of Joanna Southcote, "the virgin prophetess," forms one of the number, who though more than sixty years of age, declared she was pregnant by supernatural means, and the symptoms, were to appearance so much those of pregnancy, that Dr. Reese, had made preparations to attend her in parturition. She died, and dissection proved that "*the life within her*," which she often declared she felt, and which the doctor too mistook for the movements of the fœtus, was only the movement of flatus. She was besides enormously fat. Her "warning voice" would not suffer her to submit to a vaginal examination, or the illusion could not have been so perfect, and so long continued, as to induce her attendant, to think of saving the fœtus, during her last sickness by the Cæsarian operation.

We have ourselves noticed a couple of cases when abortion occurred at an early period of pregnancy, without the embryo being seen in the discharges, and leaving behind it a derangement of health attended by a flatulent secretion in the intestines, where the expectant mothers have made all possible preparations, and have complained of the punching made by the knees and elbows of the child, in which, when our suspicions were awakened in regard to the case, a vaginal examination, has dissipated the fond hopes of the ladies *into thin air.* This we believe to be a circumstance of not unusual occurrence, and which may very readily and guilelessly take place, when the wishes of the female, coïncide with the belief, as was the case of Catholic Mary of England, in her disclosures to her Spanish lord. The cases

above alluded to, occurred in females about the age of thirty. They are much more common, however, according to Dr. Gooch, about the period of fifty.

The collection of air, water, and hydatids, in the uterus, are other causes described by writers, of spurious pregnancy. Dr. G. has never seen air collected permanently in the uterus, so as to form *tympanitis.* In the cases he has observed, the air was not retained so as to distend the uterus, but was expelled with noise many times a day. It should he thinks be called *flatus* of the uterus. Of *dropsy* of the uterus he has never seen a case.

On polypus of the uterus, the author has a long and instructive chapter, detailing the varieties that occur, the different effects they produce, and his very great success in removing them with the ligature, by means of a straight double canula, of his own modification. This mode of cure, he prefers much to excision, as he has never known it to produce bad results, when a portion of the uterus had not been embraced by the ligature, though he has himself removed huge polypi, with pedicles thicker than the wrist. This accident he thinks may be guarded against, in all cases, by the softness and insensibility of the polypus, and the effects of pressure upon it, which distinguishes it from the inverted uterus. In placing the ligature round the neck of the polypus, he thinks it not necessary to go so high as to incur the danger of including the neck of the uterus, which has been fatal, in many instances, for his experience has assured him, that the portion of the neck which remains after the ligature and tumour comes away, dies and falls off, like the remnant of umbilical cord on the abdomen of a child. He cites an instance, however, where the ligature was applied to the fundus of an inverted uterus, which had resisted all attempts at reduction, and jeopardised the existence of the patient from the profuseness of the hæmorrhage.

"On the fourteenth day," he says, "both instrument and tumour came away; there was times when I had strong suspicion it was a polypus, but a sight of the tumour proved that it was the fundus of the uterus, for it was a hollow cup, the size of a small apple, in the cavity of which could be seen the Fallopian tubes. Excepting the pain and some vomiting, the patient had no bad symptoms during the progress of the cure, and several months afterwards her husband called on me to say she was quite well."

Polypus of the uterus Dr. G. believes to be a much more frequent disease than is generally supposed, that in many cases where it exists and produces hæmorrhage, &c. from the uterus, it is never detected, and in other cases only after it has attained a considerable size, and drained the circulation, and injured the health, if not destroyed the

life of the patient. If detected and removed, the patient not only lives, but regains perfect health, and may continue to bear children.

Dr. G. asserts that pregnancy has taken place during the existence of a polypus, which he removed successfully in the fifth month of gestation. In regard to the other kinds of tumours than polypi, which are formed in the vagina, he says—

"Whenever the tumour has a stalk, which can be included in a ligature without any danger of including the neck or fundus of the uterus, I would apply it; it succeeds in an immense proportion of cases. I have known it succeed in several, when from the cauliflower roughness of the tumour, others have been deterred from it, and even if the excrescence should return, the patient is not worse off than she was before. She has had the only chance which art can afford her, and has lost nothing, even if it fails."

In the genuine cauliflower excrescence, its application would be much less promising, though the author would still advise it, "whenever the form of the excrescence is such that the whole can be removed by a ligature, without including any portion of the uterus." The author observes, that these malignant excrescences in the vagina, are a far more unusual disease than practitioners generally imagine, and that among the cases in which he is consulted from the country, none are so frequently mentioned as the cauliflower excrescence; yet he says the fact is, "that where we see one case of cauliflower excrescence, we see ten or even twenty of common polypus, and fifty of carcinoma or malignant ulcer of the uterus."

Some cuts are introduced into the work, to illustrate the different situations of polypi; the kind of instrument the author employs, as well as his mode of using it.

Under the head of "polypus of the uterus, attended by unusual circumstances," among others, Dr. G. details a case, where a polypus of the neck of the uterus in an unmarried women, kept up a leucorrhœal discharge during two years, which could only be suppressed by the removal of the polypus, which was of a size of a walnut by the ligature. In this case there was no hæmorrhage, so different from what usually occurs in this affection. Small tumours of the size of a filbert, will sometimes cause very considerable hæmorrhage, and as such are too small for the application of the ligature; he advises them to be pulled away with the finger, or twisted off with a pair of surgeon's forceps. He cites a case of cylindrical polypus, which, in a woman who had long been subject to hæmorrhages from the uterus, was suddenly protruded from the vagina, projecting near half a foot from the external orifice. It was about half as thick as the wrist, resembled somewhat an intestine, but could be distinctly traced

through the orifice of the uterus. It was removed successfully by the ligature.

The two following chapters on the "irritable uterus," and "a peculiar form of hæmorrhage from the uterus," have already been noticed in this journal, in Volume VIII. to which we would refer our readers.

The last and concluding chapter of this work, is upon a subject, entitled "symptoms in children erroneously attributed to congestion of the brain." The object of the author, as we have before mentioned, has not been to work up a book for the purposes of sale, comprehending within it all the different diseases of the obstetrical art; but to limit his remarks to such places only, where there appeared an hiatus skipped over by previous writers. He believes that in children, weak and delicate by nature, as well as in those who have been greatly reduced by bowel complaints, or defective nutrition, there are often symptoms of cerebral affection, which able practitioners have repeatedly mistaken for congestion of the brain, and which Dr. G. believes, depends upon an opposite cause, a deficiency of blood in the brain, and an irritability in that organ to perform its functions. A collapse from lack of excitement, instead of from inflammation or congestion of that organ. The leeches, cold application and cathartics, suited to the latter affection, would, of course, be directly improper for the former—which would require nourishing food, and strengthening medicines. We conceive that practitioners, who do not believe that diseases occur only in regular grades, and have each a set of symptoms peculiarly their own, which they never loan out to another disorder, and which are only to be treated by a certain set of prescriptions, set down by the fiat of experience, to be registered at home, or carried in the pocket in a note-book, will readily admit the correctness of Dr. Gooch's reasoning. Such physicians who are accustomed to look at every new case of disease as a new subject of study, eternally varying from other cases, according as one or more of the organs is in a more or less excited or asthenic condition, may believe that in debilitated children, the loss of function in the brain may depend upon other causes than congestion, and would not, we think, if very observant, mistake it. Such occurrences are admitted by Dr. Gooch to be far the least common—and in our country, where children have generally healthier parents, are better fed, clothed and live in purer air, such cases no doubt occur, but infinitely more seldom than the irritative affections of the brain. Such cases are analogous to the *apoplexia ab inanitione* of the older writers, in which

the loss of function of the brain is not certainly to be restored by bleeding, but by nutriment and tonics. It is well known, that in great exhaustion from disease, or after profuse losses of blood, vision has been rendered imperfect, noises occur in the ear, with impaired hearing, and the mental functions for a time nearly cease. The insensibility of the brain in these cases, so far as we can discover, depends upon the enfeebled circulation. Coma, stertorous breathing, dilated and motionless pupil, and serous effusion into the brain after death, are mentioned by Dr. G. among the appearances in these cases of astheny, similative of congestion of the brain. To do him justice, we will cite one of his fatal cases, passing over those where recovery took place under his restorative plan of treatment.

"A little girl about two years old, small of her age, and very delicate, was taken ill with the symptoms which I have above described, (drowsiness, languor, absence of active febrile symptoms.) She lay dosing, languid, with a cool skin, and a pulse rather weak, but not much quicker than natural. She had no disposition to take nourishment. Her sister having died only a week before of an illness which began exactly in the same way and had been treated by leeches and purgatives; and some doubts having been entertained by the medical attendant of the propriety of the treatment, leeches were withheld, but the child not being better at the end of two days, the parents, naturally anxious about their only surviving child, consulted another practitioner. The case was immediately decided to be one of cerebral congestion, and three leeches were ordered to be applied to the head. As the nurse was going to apply them, and during the absence of the medical attendants, a friend called in who had been educated for physic but had never practised, and who had great influence with the family. He saw the child, said that the doctors were not sufficiently active, and advised the number of leeches to be doubled. Six therefore were applied; but when the medical attendants assembled in the evening, they found the aspect of the case totally altered, and that for the worse; the child was deadly pale, it had scarcely any pulse, its skin was cold, the pupils were dilated and motionless when light was allowed to fall upon them, and when a watch was held to its eyes it seemed not to see; there was no squinting. The next day she vomited her food several times; it was therefore directed that she should take no other nutriment than a dessert-spoonful of asses milk every hour, and this was strictly obeyed and continued for several days. The child wasted, her features grew sharp, every now and then she looked fretful, and uttered a faint squeaking cry; the eyeballs became sunk in the socket, like those of a corpse that had been dead a month; the skin continued cool, and the pulse weak, tremulous, and sometimes scarcely to be felt. Under this regimen, and in this way, she continued to go on for several days. At times she revived a little, so as to induce those who prescribed this treatment to believe confidently that she would recover; and she clearly regained her sight, for if a watch was held up to her, she would follow it with her eyes. She lived longer than I expected, a full week, and then died with symptoms of exhaustion, not those of

oppressed brain. The head was opened by a surgeon accustomed to anatomical examinations, and nothing was found but a little more serum than usual in the ventricles."

From some cases, with similar symptoms related by the author, where recovery almost immediately followed the exhibition of a few drops of sp. of ammonia, in a decoction of bark, with good diet, and also, from the tenor of his remarks, we are induced to believe, that had a similar plan been adopted in the foregoing case, the issue would have been more happy. Our author, however, anxiously deprecates the opinion, which some might be induced to form, that he does not believe that heaviness of the head and drowsiness in children commonly depend on congestion, and are to be relieved by depletion, and that acute hydrocephalus is a serous effusion, the result of inflammation, and capable of being cured only in the inflammatory stage by bleeding and purging.

"These vital truths," he says, "I would state as strongly as any man, but there are opposite truths. All that I mean is, that these symptoms sometimes depend, not on congestion, which is to be relieved by bleeding, but on deficient nervous power, which is to be relieved by sustaining remedies. All I advise is, that not only the heaviness of head and drowsiness should be noticed, but the accompanying symptoms also, and that a drowsy child, who is languid, feeble, cool, or even cold, with a quick, weak pulse, should not be treated by bleeding, starving and purging, like a drowsy child who is strong, plethoric, has a flushed face, perhaps swelled gums, and a heated skin."

We shall here close what we have to say in regard to this author, after having been betrayed into many more remarks than we originally intended, by what we conceive to be the practical usefulness of the author's observations. Though many of his subjects are to be considered as exceptions to the kind of affections that more generally occur in practice, they are for that reason the more valuable, and more deserving the attention of practitioners. As they have been discovered only by experience, sad so far as related to the sufferers themselves, let the medical world read and think, so as to avoid a duplicate array of victims, to establish a series of facts, which have been already proven. We would recommend this book to physicians, believing that many would find it useful to themselves and to their patients, as well as interesting in the perusal from the lively manner in which it is written. J. P.

BIBLIOGRAPHICAL NOTICES.

XII. *A Critical and Experimental Essay on the Circulation of the Blood, especially as observed in the minute and capillary vessels of the Batrachia and of Fishes.* By MARSHALL HALL, M. D., F. R. S. E., M. R. I., M. Z. S., &c. &c. London. 8vo. 1832.

Dr. Marshall Hall, the author of the work of which we propose to offer a brief analysis in the present article, must be allowed to be a zealous and laborious investigator, and an indefatigable writer. Although scarcely past the meridian of life, he has contributed more amply to the medical literature of his country than almost any of his contemporaries; and while it is freely confessed that we cannot discover in his various productions, the indication of a transcendant genius, no one will refuse to concede that they afford evidences of sound judgment, industrious research, and not a few original and useful views, which entitle the author to our respect, and justify the satisfaction which the reading portion of the medical profession in England, and we may add in this country, experience on the appearance of a new work from his prolific pen.

The subject treated of in the present essay is one of great interest to physiologists, for there are few topics on which more has been written, which are viewed in a more diversified manner, and on which, consequently, positive decisions are more desirable than the circulation of the blood in the capillaries, the powers which circulate the blood, and the influence of the brain and spinal marrow upon the circulatory function. On all these points the remarks and experiments of Dr. Hall, as detailed in the present work, are calculated, we think, to throw some light, and to enable us to arrive at more satisfactory conclusions than we have heretofore been able to do.

In a short introductory chapter, Dr. Hall indulges in some sensible remarks on the principles of investigation in physiology. According to him, the sources of our knowledge in that department of medical science, or, indeed, in all natural science, are observation and experiment. The former consists in a sustained and watchful attention to events which pass under our eye in the ordinary course of nature; the latter, in devices for placing natural objects in new and unusual circumstances or situations. The following principles are laid down by him for the prosecution of physiological investigations. 1*st*. Never to have recourse to experiments, in cases in which observation can afford us the information required. 2*d*. Never to perform an experiment without the persuasion, after the most mature consideration, that the object desired will be attained by that experiment, in the form of a real and uncomplicated result. 3*d*. Never to repeat experiments which have been performed by physiologists of reputation, unless there be some doubt respecting their accuracy, or the accuracy of the deductions drawn from them. To these he adds, 4*th*, that when a given experiment has been concluded to be essential and adequate to the discovery of a truth, it should be instituted with the least possible infliction of suffering; and

5th, that every physiological experiment should be performed under such circumstances as will secure a due observation and attestation of its results, and so obviate, as much as possible, the necessity for its repetition.

"The whole science of medicine and surgery is dependent on physiology. To exclude physiological investigation, would be to erect an utter barrier to the progress of our art, viewed in any other light than as mere empiricism. They alone can repair a machine who understand its construction and its movements.

"In thus stating the argument in regard to what is right and just in physiological investigation, I have steered a course equally distinct from the heartless cruelties practiced by some soi-disant physiologists, and the senseless declamations of others against what they are pleased to call vivisections. The whole argument may be concentrated to a point:—are Harvey, Haller, and Hale, worthy of our applause for their researches into the circulation and the action of the heart? Let us remember that they performed experiments. It is not, therefore to experiments that we can object, but to such experiments as are unnecessary or useless, or performed without regard to the pain or sufferings inflicted. We may at the same time admire the conduct of one experimentalist and condemn that of another."

The first chapter of the work is occupied with an inquiry into the anatomy of the minute and capillary vessels. Dr. H. sets off with the remark, that all the descriptions of these vessels and of the circulation in them, contain so many inaccurate statements, that they appear to have been written from the imagination rather than from actual observation. He cites as examples of such inaccuracies what is alleged of the frequent anastomoses and conjunctions of the minute arteries, and of the immediate termination of these arteries in veins, as they are observed in the web of the frog;—anatomical dispositions, which if they occur at all, do so so very rarely, that after the most diligent search, he could never be able to detect them in a single instance. Influenced by the conviction that the real course and distribution of the vessels in question and the real phenomena of the minute, arterial, capillary, and venous circulation are very peculiar and highly interesting, Dr. H. has devoted much time to a patient investigation of these subjects, and has presented in the chapter before us the results of his observations. His experiments appear to have been conducted with great care, and with a due regard to all the circumstances that could insure perfect accuracy. He employed the achromatic microscope of Mr. Dollond, and devised peculiar modes of placing the moving scenes he had to examine under the field of its object-glass. Dr. Hall very properly remarks, that in describing the minute and capillary vessels and circulation, we should attach distinct ideas to the various terms employed, and especially distinguish the capillary vessels from the minute arteries from which they arise, and from the minute veins to which they give origin; because a neglect of these circumstances has given rise to the confusion which pervades the descriptions extant on that subject. His views relative to the arrangement of those vessels will be gathered from the following extract:—

"The minute vessels may be considered as arterial, as long as they continue to divide and subdivide into smaller and smaller branches. The minute veins are those vessels which gradually enlarge from the successive addition of smaller roots. The true capillary vessels are obviously distinct from each of these. They do not become smaller by subdivision, nor larger by conjunction, but they are characterized by continual and successive union and division, or

anastomoses, whilst they retain a nearly uniform diameter." "These distinctions are highly important. Without them, the phenomena cannot be clearly described or understood. It is quite erroneous to speak of capillary arteries or capillary veins, or of the true capillary vessels as a venous net-work,—as vessels containing a serous blood without globules, or as rather to be inferred than accurately seen. The last branches of the arterial system and the first root of the venous, may be denominated minute; but the term capillary must be reserved and appropriated to designate vessels of a distinct character and order, and of an intermediate station, carrying red globules, and perfectly visible by means of the microscope. Meckel is obviously in error, in omitting to mention the capillaries altogether; and Adelon, in speaking of the capillary system in the plural number, including under that designation the nutrient, secretory, and exhalant vessels."

We may here mention, that Dr. Hall's mode of proceeding, which enabled him to place under the microscope the lung and mesentery of animals, in order to ascertain whether there be any difference between the systemic and pulmonary minute and capillary vessels and circulation, and insured a continuance of the circulation, unimpeded and undisturbed, for a sufficient time, is founded on an observation originally made by Mr. Edwards, and mentioned in that distinguished physiologist's work on the influence of physical agents, viz. that batrachian reptiles, placed in water of 42° of the centigrade thermometer, or 108° of Fahrenheit die almost immediately. On repeating these experiments, with the view to ascertain the cause of so sudden an annihilation of life in these animals, Dr. H. found, that although sensation and motion had entirely ceased, and the animal had become rigid and apparently dead, the action of the heart still continued. Having placed the lung of the animal under the object-glass of the microscope, he was gratified to find the circulation, arterial, capillary, and venous, quite perfect, and "had thus an opportunity of contemplating at leisure, in one instance during four successive hours, under circumstances free from the infliction of pain or suffering, this most splendid and interesting scene." Dr. Hall subsequently found that water of the temperature of 120° Fahr. answers far better than water at 108°.

With a view to determine the point to which we have alluded above, whether there be any difference between the capillary vessels of the systemic circulation and those of the pulmonic, Dr. Hall examined, in the way mentioned, the fin and tail of the stickleback, the web of the frog's foot, the mesentery of the toad, and the lungs of the salamander, frog and toad. The account he gives of the physical characters and arrangement of the minute and capillary vessels of both the systemic and pulmonic circulations is the most distinct and intelligible we are acquainted with, and has led Dr. H. to the conclusions respecting the character of these vessels, which we have already stated in his own words. We are aware, that his account applies solely to the capillary system of the saurial and batrachoid reptiles; but it is reasonable to believe, the same arrangement, if it really occurs in them, will be found to prevail in the higher orders of animals. But however interesting the details on the subject may be, we are compelled to omit them in this place and to refer such of our readers as may be curious on matters of that kind, to the volume itself. We can make room only for the following extract.

"If we institute a general comparison between the systemic and pulmonary

circulation, we shall arrive at the following conclusions. The arteries in the former divide and subdivide at considerable intervals, until they become extremely minute; and from the rapidity of the circulation, are only distinctly seen by the aid of the higher powers of the microscope; in the latter, the subdivisions of the minute arteries take place at the nearest points along its course, the arteries terminate abruptly, the branches assume at once the capillary characters. The veins are formed in a manner perfectly similar to that of the division of the arteries, in the systemic and pulmonary circulation respectively; the capillary vessels of the systemic circulation are far less numerous and more tortuous than those of the lung. It may be said, that in the web, the vessels are adapted to support the nutrition and life of its various textures; in the lung, that the membrane is a mere scaffolding to spread the vessels which convey the blood in the fullest manner over its extensive surface."

This description applies more particularly to the difference in the arrangement of the vessels in the systemic and pulmonic circulatory apparatuses of the salamander, but will do so with trifling modification, to the differences in the other reptiles examined by Dr. Hall.

The next subject which Dr. H. investigates, consists of the powers which circulate the blood. The question of the entire circulation, he remarks, is a problem made up of so many elements, that it is not extraordinary it should have been so difficult to fix and limit the value and influence of each; and that as usual in the absence of proofs, the subject should have been rendered more obscure by being veiled in a variety of conjectures. According to him the circle performed by the blood may be not inaptly divided into four arcs. Of these the heart must be viewed as the principal and first; the arteries as the second; the capillary vessels as the third; and the veins as the fourth. "To view each arc distinctly, as well as the whole circle connectedly, will greatly assist us in forming accurate views of the nature of the circulation."

In order to present to his readers a sketch of the opinions of the principal physiologists who have chiefly occupied themselves in the investigation of the powers which move the blood, and thus indicate the state of our knowledge on that subject, at the time he commenced his own researches, Dr. Hall favours us with long extracts from the works of Galen, Harvey, Haller, Spallanzani, Tourdes, Bichat, John Hunter, Huxham, &c. After doing this he passes to the detail of his own observations.

"*Of the extent of the influence of the heart in the circulation.*"—Dr. H. remarks that if the circulation in the web of the frog be carefully examined under the most favourable circumstances, it will be found to be very rapid in the arteries, much less so in the capillary vessels and in the veins, and equable in all. He has almost invariably been able to detect, with a good microscope, a degree of pulsatory acceleration of the blood in the arteries at each contraction of the heart, and is disposed to conclude, from his own observations, that the natural circulation was rapid and entirely pulsatory in the minute arteries, and slow but equable in the capillary and venous systems. The pulsatory movement, at each systole of the heart, becomes very manifest whenever the circulation is in the slightest degree impeded. Under such circumstances it is seen in all the three systems of vessels, arterial, capillary and venous. "In the arteries there is generally an alternate more or less rapid flow of the globules, at each systole and diastole of the heart; in the capillaries and veins, the blood is often completely arrested during the diastole, and again propelled by a pulsatory movement,

during the systole of that organ." Dr. Hall thinks that these phenomena are conclusive proofs that the power and influence of the heart extend through the arteries to the capillaries, and through these to the veins, even in the extreme parts of the body.

Evidence of the muscular action of the arteries.—In support of the existence of an important influence of the arteries, Dr. Hall adduces the fact of a perfect circulation in acardiac fœtuses and acardiac animals. Nevertheless he admits, that it may be contended, that much in the circulation, in such cases is effected in the capillaries. He further adduces, in support of this important influence in the arteries, the circulatory apparatus in fishes and the crustacea; the former of which have a simple pulmonic heart only, the latter a single aortic heart. To these arguments derived from cases of monstrosity and from comparative anatomy, Dr. H. has added that from experiment. He repeated thrice an experiment originally performed by Haller and Spallanzani, and which consists in excising the heart and marking the results.

"A ligature was applied round the aorta of a frog. The circulation in the web, which was previously very vigorous, was almost immediately arrested, first in the capillaries, then in the veins. In the arteries there was a singular oscillatory movement of the blood for ten or fifteen minutes. The globules of blood proceeded slowly onward for some seconds; there was then, all at once, a rapid retrograde movement of the blood apparently through the same space. The oscillation was repeated; the globules of blood were again moved alternately in progressive and retrograde directions as before. It appeared to me, that the artery gradually contracted, in successive portions, and slowly emptied itself by propelling the blood in a continued stream along its final branches; that it then dilated suddenly, and drew the globules of blood in a rapid retrograde course.

"During the first contraction of the artery, the blood would be propelled along the capillaries and veins. During the succeeding contractions and relaxations of the artery, the globules would merely oscillate, being driven forwards and drawn backwards alternately. From these observations, it would appear almost certain, that the arteries possess a muscular contractile power."

But these are not the only circumstances adduced by Dr. Hall in favour of the contractile power of the arteries. He further points out, as corroborating his opinion; 1st. The anatomical arrangement of these vessels, referring to Mr. Hunter for the details on the subject, and for the arguments flowing from it. 2d. The augmented impulse in particular arteries,—a phenomenon particularly noticed by Laennec. 3d. The effect of elevated temperatures upon these organic tubes. On the latter subject our author remarks, that he had not only observed that the batrachia, on being exposed to water of 120° of Fahrenheit, died almost instantly; but that the superficial muscles became rigidly contracted. He exposed the heart to the influence of water raised to this temperature, and noticed that this organ immediately became small, pale, and rigid. This circumstance led him to presume, that the experiment might confirm or correct our views respecting the muscularity of the arteries and of other textures of the body. Having tried the experiment, he found that a mere fibre of a longitudinal muscle was shortened and made rigid, while a portion of membrane or nerve underwent no change. He next took an artery and vein which lay nearly flaccid upon a portion of glass, and placed them in the water. The artery immediately became rigid and cylindrical, while the vein suffered no apparent change. Dr.

Hall thinks that the results of these experiments furnish an important confirmation of the opinion, that the arteries possess a muscular and consequently a contractile tissue. Yet he frankly admits that none of the above arguments are absolutely decisive. The function of the arteries, he says, are mingled in the cases of the acardiac fœtuses and acardiac animals, in the fish tribe and in the crustacea, with that of the capillaries; and unless we are enabled to separate these two orders of vessels, it is impossible that we should ascertain the function appropriate to each. The argument derived from the structure and the augmented action of the arteries, and the influence of an elevated temperature, he regards as more distinct. "The apparent effect of alternate contraction and relaxation of the artery after the ligature of the aorta, is certainly most powerful; indeed it scarcely admits of a remaining doubt of the structure and function of the arteries."

Nevertheless, Dr. H. thinks it is important that this possible doubt should be removed,—an object which he regards as satisfactorily effected by the interesting fact, discovered by him, of an artery in the frog and toad, which pulsates distinctly for a considerable time after the removal of the heart.

"The artery to which I allude, is a branch from each of the arteries which in the frog and toad, after separating at a short distance from the heart, rejoin and form the aorta. Pursuing its course backwards and downwards, it passes under the transverse process of the third vertebra. It is here bound down. It is also very tortuous. When the viscera are removed, two pulsating points are distinctly seen at this part. On a minute examination, these pulsating points are found to be portions of cellular and muscular textures, above and below the transverse process just mentioned, moved by the contraction of a subjacent artery. On removing these textures carefully, and on removing the skin from the back of the animal, the part along which the artery passes on emerging from beneath the transverse process, is sufficiently thin and transparent to admit of its being placed under the microscope. The artery is then plainly seen to pulsate, becoming straighter and paler at each contraction. The adjacent textures are moved at the same time, and the blood is frequently seen to oscillate in a branch of the same artery situated very near it." "In this fact we have the most, and, I may add, the only indubitable proof of a contractile action in an artery."

Want of proof of irritability in the true capillaries.—Dr. Hall remarks, that the flow of blood through the capillaries appears in every instance to be effected and modified by powers impressed upon it, and of a character extraneous to any action of these vessels themselves. The following circumstances are offered in support of this opinion. 1st. The influence of the contraction of the heart is quite obvious upon the motion of the blood in the capillaries. 2d. The struggles of the animal have an influence in retarding or arresting the flow of blood in these vessels, or rendering it retrograde. 3d. Any cause of contraction in the membranes forming the web itself, has a remarkable influence upon the course of the blood in the veins and capillaries. 4th. If the limb be bound with a tight ligature, the blood is rendered retrograde in its movement along the minute veins and the capillaries, by slight degrees of pressure made upon that part of the limb which intervenes between the ligature and the web. The blood is thus simply pressed out of the large vein of the limb in a retrograde course along its roots and the capillary vessels. 5th. We frequently remark anastomosing branches between the veins of the web of the frog. The globules of

blood in them vary in their course at every moment, and in every possible manner. Similar phenomena are noticed in the capillaries themselves; and especially in those occupying spaces between two adjacent veins. Every kind of movement in the globules of blood may be observed in these vessels, the obvious and distinct result of forces impressed upon them, or of issues afforded them. 6th. When the course of the blood along a large vein is arrested, this vessel immediately assumes the character of an artery, apparently giving off branches, instead of receiving roots—the globules of blood pursuing a retrograde course.

Dr. Hall opposes the following objections to some experiments performed by Dr. Philip, (from which that distinguished physiologist argued for a contractile power in the capillaries,) in which, after the brain and spinal marrow had been crushed, an effect was observed upon the circulation in the capillaries similar to what is observed in the heart under similar circumstances; the capillary circulation like the beat of the heart being immediately arrested or impaired. 1st. The influence of the heart itself was not removed. 2d. The influence of the arteries, which Dr. Hall thinks he has proved to possess a contractile power, was not separated from that of the capillaries with regard to which the question remains to be determined. 3d. The capillary circulation was also left subject to the influence of contraction in the whole muscular system.

As regards Dr. Philip's other argument in support of a contractile power in the capillaries, derived from observing the effect of the application of various substances to the web upon the capillary circulation and vessels, Dr. H. remarks, that—1st. The pain inflicted accelerates the circulation. 2d. The struggles of the animal variously retard or arrest it. 3d. The action of the irritant upon the membranes of the web, upon the parietes of the vessels, and upon the contained blood is various and complicated, so that it is impossible to determine whether the action of the capillaries themselves be augmented or diminished, or whether these vessels, admitting them to possess any vital contractile powers, be excited or debilitated, in so complicated an experiment. From all that precedes, it is obvious, according to Dr. H., that whilst every fact relative to the capillary circulation leads us to ascribe its various phenomena to forces impressed upon it from without, there is nothing of satisfactory evidence or argument for an automatic power in them.

We may here mention that, in a postscript to chapter second, contained in the preface, Dr. H. observes, that some further deductions may probably be drawn from the experiment of applying a ligature round the large vessels connected with the heart, beyond that of the irritability of the arteries, and in favour of the absence of contractile power in the capillaries. To this he is led by the observation of the fact, that under such circumstances a peculiar, slow, oscillatory movement of the blood is observed in the arteries, whilst that of the capillaries and veins is motionless; a circumstance which could not hold if these vessels had the same power of irritability as the arteries.

Dr. Marshall Hall treats, in a separate section, "of the influence of the acts of inspiration and expiration, upon the venous circulation." In regard to the influence of the former of these acts, he contents himself with quoting a passage from the work of Dr. Barry, whose views he seems to adopt, and with endeavouring to refute some of the objections raised against them by Dr. Philip.

In reference to the influence of expiration, he remarks, that when the circulation is seen proceeding rapidly in the web of a frog, (though previously arrested during some minutes,) it is often arrested, *de novo*, on pressing or even touching the animal—an effect arising probably from fear, and ceasing when the frog has been some time in its new situation. This cessation of the circulation, Dr. H. thinks, depends upon interrupted breathing with the action of the expiratory muscles, and is easily produced at any time by making a moderate pressure upon the thorax.

"In this manner, we observe the effect of the effort of expiration, actual expiration being prevented by the closure of the larynx. It seems to be the reverse of the experiment of Dr. Barry. Its influence extends to the extreme parts of the circulating system. The influence of inspiration, in Dr. Barry's experiment may do so too: but I confess I think it remains to be determined, where the influence of inspiration and of the atmospheric pressure begins; or in other words, how far it extends from the thorax itself."

The author next enumerates various modifications in the flow of the blood along the minute and capillary vessels. He remarks, that under the influence of certain modifying causes, as pressure, the struggles of the animal, a ligature round the limb or large vessels, excision of the heart, the flow of blood along the minute arteries and veins and capillary vessels, becomes variously pulsatory, oscillatory, retrograde, or arrested, in one or other of these three series of vessels.

As we cannot make sufficient room for the author's details on these subjects, some of which have already been adverted to by us, we must refer for them to the work itself, and terminate the analysis of Dr. Hall's second chapter with the following quotations from a "postscript" contained in the preface.

"The due diffusion of the blood in the minute and capillary vessels, appears to be regulated by a principle of tension subsisting between the contents of these vessels, their parietes, and the integuments. It is on this principle that the blood leaves the vessels of the web as the powers of life decline. It is on this principle that the blood flows into other channels when its proper channel is obstructed. It is on this principle that the blood flows in all directions to the point at which a vessel is wounded or opened, as in the experiments of Haller and Spallanzani. It is on this principle, that there is an apparent circulation in the minute vessels after the excision of the heart, or the division of the large vessels of a limb. This movement of the blood is towards the point of division, and therefore retrograde in the arteries. The effects of increased tension in the integuments are readily seen on extending the web more or less tightly; a feeble circulation is perfectly arrested, and the more powerful circulation is greatly modified by this means." "This tension of the integuments is, I think, the source of many of the phenomena of the minute and capillary circulation."

The next subject to which Dr. H. directs the attention of his readers is, the influence of the brain and spinal marrow upon the circulation. Previous to stating his own experiments and observations on that point, he gives, by means of long quotations, an account of those of Spallanzani, Fontana, Whytt, Legallois, Philip, Clift, Flourens, all of whom have investigated, with various results, this interesting physiological question. We shall not follow our author in these details, because to do so would necessitate more room than we can conveniently spare, and because the writings of most of the physiologists we have enumerated are of easy access. Nor shall we enlarge much on the facts and experiments

upon which Dr. Hall has founded his opinion on the subject before us, as it will be sufficient for our present purposes to offer a summary of his conclusions. Before doing this, however, we must be allowed to state briefly our author's views respecting the criteria of the power of the action of the heart, and the nature of the action of the heart after its removal from the body.

Legallois judged of the power of the heart by the fulness of its carotids and by the hæmorrhage observed on amputating a limb. Similar modes of judgment were adopted by Dr. Philip, who, however, added to them the observation of the circulation in the web of the frog. Dr. H. is not satisfied with these modes, and thinks it is essential to observe the results of the experiments with greater minuteness. This may be done by attending to the changes which take place in the circulation of different parts. For example, the circulation first ceases—

"In the extreme, and then in the proximate parts of the web; first in the capillaries and veins, and then in the arteries. It may still be seen in the lungs, however, in which it ceases in the same order, in the distant parts and capillary vessels first, then in the larger arteries; at length the lung ceases to be moved by the power of the contraction of the heart. Even at this period, the apparent action of the heart itself is vigorous and regular, and continues so for a very considerable time. Criteria of the power of the heart are thus afforded us, in the continuance of the circulation, first in the web, and next in the lung, and lastly in that of the beat of the heart itself."

Dr. Hall refuses to admit, that the action of the heart, after the removal of the brain and spinal marrow, or where that organ is taken out of the body entirely, differs in any manner except in feebleness, from its natural beat; an opinion held by Legallois, who referred the movements of the heart, under such circumstances, to the exercise of its irritability, and assimilated them to those elicited in other muscles, during some time after death, by irritation.

"That this observation," Dr. H. says, "is unfounded, appears from the following facts. If instead of removing the heart alone, it be removed together with the other viscera, in the salamander or the toad previously rendered insensible, its beat is not only still observed to continue, but the circulation is distinctly seen in the pulmonary, minute and capillary vessels. A slight degree of this circulation is still seen, if a double ligature be carefully passed under the heart, and then separated and tied above and below this organ and the roots of the lungs. In this case every part is removed except the heart and pulmonary vessels; so that it approaches as nearly as possible to the case of the removal of the heart alone. Yet the action of this organ is still such as to carry on in a slight degree, and for a short period, the circulation of blood through the pulmonary artery and a few of the capillary vessels. It may also be observed, that in the last experiment, scarcely any part of the nervous system remained; its masses were entirely removed, its filaments alone were left to influence the result of the experiment."

After detailing a number of experiments instituted for the purpose of ascertaining the effect of removing the whole of the brain and spinal marrow at once, Dr. Hall allows that they all appear to prove that the action of the heart is enfeebled from the moment it is deprived, suddenly, of the combined influence of the brain and spinal marrow. The connexion of this organ, with the nervous system, seems, according to him, to be precisely of the same nature as that of the voluntary muscles. Both possess a degree of irritability independently of

the large masses of the nervous system; both if separated from these masses, gradually lose this irritability. The irritability, he adds, is doubtless a faculty or property of the muscular fibre; yet it may become extinct without any obvious change in that fibre. Its continuance or renewal depends ultimately upon the masses of the nervous system.

"The experiments which have been detailed, seem to prove, that from the moment of the abstraction of the brain and spinal marrow, the irritability of the heart begins to fail. The circulation is first enfeebled, then lost, in the most distant parts of the system, then in parts less and less remote. The distance to which it extends may be aptly taken as expressive of the remaining power of the heart, the principal organ of the circulation."

"These experiments appear on the other hand to disprove the opinion of Legallois, repeated by M. Flourens, that the power of each part depends upon that portion of the spinal marrow which is adjacent to it, and from which it receives its nerves."

Dr. Hall shows, by means of experiments, the error of Flourens, who maintains that the spinal marrow exercises an influence over the circulation merely in so far as it influences the respiratory process; and that the first of these functions is arrested by the destruction of the medulla oblongata. In Dr. Hall's experiments the destruction of this part did not produce the effect in question any more than the destruction of any other portion of the cord. He consequently concludes that the circulation no more depends upon the medulla oblongata than upon the medulla spinalis.

Legallois was of opinion that the circulation of a part was arrested by the removal of that portion of the spinal marrow from which it derives its nerves. M. Flourens at first adopted the same view of the subject; though he afterwards appears to have modified it from the results of more recent experiments in which the spinal marrow in frogs and in some kinds of fish was destroyed, while the circulation in the lower parts of those animals—the very parts supplied by this portion of the cord, continued. Dr. Hall's experiments have, as we have seen, afforded the same results. These experiments also confirm an observation made by Legallois, that by destroying small portions of the medulla spinalis at a time, and at intervals, a much larger extent of that cord can be removed without arresting the circulation than if the destruction of the whole had been effected suddenly. Dr. H. accounts for this circumstance in the following manner.

"If a portion of the masses (nervous) be removed, and if this be compatible with life, the animal is reduced to a lower degree in the scale of organized beings. It lives as a still lower animal; and it becomes capable, on this principle, of enduring new privations. I doubt not that, in this manner, the whole brain and spinal marrow may be removed, and that the animal may live, sustained by the mere ganglionic masses, and the cutaneous respiration."

He adds that from the moment, in the experiments performed for ascertaining the above point, the whole of the brain and medulla was destroyed, the circulation gradually, progressively, but slowly failed. From this Dr. Hall once more concludes, that it cannot by any means, be said that the circulation is independent of the brain and spinal marrow. It is proper to observe, however, that in a chapter on the influence of other organs upon the heart and circulation, he

explains more explicitly than he had heretofore done his views in relation to the nature of the connexion between the nervous centres and the heart.

"Whatever may be the character of that connexion which subsists between the brain and spinal marrow, and the heart and the circulation, the same thing is observed in regard to other organs or parts, and the organs of circulation. There may be a difference in degree, but there is none in kind. The heart may be more independent of a limb than of the spinal marrow; it may be less influenced by crushing the former than the latter, but still the principle is the same. It is one of mutual connexion rather than of individual function."

He attributes the transmission of these effects to the medium of the organic structures, and says that if the heart and circulation be viewed as independent of the brain and spinal marrow, yet impressible through them, this is equally true of their relation to the stomach or a limb. He admits that it is impossible to remove the brain and spinal cord at once without impressing the powers of the circulation, so that the motion of the blood in the capillary vessels immediately fails in the extreme parts of the system, and gradually in those placed nearer the heart; but adds, that crushing the limbs, &c. annihilates the circulation, and yet this function is, strictly speaking, independent of any of the limbs.

Dr. Hall states that he has been greatly disappointed in repeating the experiment of applying stimulants to the brain and spinal marrow in the batrachia. The results which he obtained differ very materially from those recorded by Dr. Philip. The latter, as many of our readers may perhaps recollect, found that alcohol, when applied to the muscular fibre, impaired its sensibility; that when applied to the brain or spinal marrow, it increased the action of the heart, and that solutions of opium or tobacco increased that action, though in a less degree, an effect followed by a considerable diminution of energy. In the experiments which our author instituted in order to settle this point, he found that alcohol and laudanum enfeebled the circulation of the web, that a watery solution of opium obliterated the circulation, and brought on complete tetanus, similar to that produced by strychnia, and that alcohol applied to the surface of the brain and spinal marrow, previously rendered insensible by laudanum, produced no acceleration whatever either in the beat of the heart or in the motion of the blood in the web.

Dr. Hall remarks, that he has always distrusted the experiments in which irritant or stimulating substances have been applied to the web of the frog, in order to determine the question of the irritability of the capillary vessels; because this kind of experiment involves too many causes of complication, to admit of any conclusion being drawn from them respecting either the nature or function of the vessels in health, or their modifications in disease. Much of the effects obtained he refers to pain and fear, both of which influence powerfully the circulation of the capillaries, and are even sufficient when acting together, to arrest it temporarily. To these sources of confusion must be added the struggles of the animal, which are occasioned by the pain, and cause the blood to stop, to oscillate, and to become irregular in its motion. The next effect produced by such experiments is, according to the nature of the substance applied, various degrees of constriction or corrugation of the external membranes of the web itself, which will induce various impeded or even retrograde movements in the globules of the blood. The application of a stimulant will also variously affect the textures of the subjacent minute and capillary vessels, and induce propor-

tionate changes in the motion of the globules of blood; and it is almost certain, that the influence of some substances extends even to the contents of the minute and capillary vessels.

Dr. Hall presents in a separate chapter, "a brief account of the singular phenomenon of a caudal heart in the eel," and in another chapter some interesting remarks on the effects of warm water on muscular textures. But for the details on both these subjects we must refer to the volume itself.

In taking leave of the work before us, we must be permitted to express, once more, a favourable opinion of its merits. While doing this, however, we are not prepared to join Dr. Hall in all the conclusions he has deduced from his experiments and observations. But as we could not expatiate on all those points on which he appears to us to have erred or decided too hastily, without extending this article far beyond its intended limits, we have abstained entirely from obtruding our own remarks, and leave our readers to make their inferences from the views presented by Dr. Hall. R. La R.

XIII. *Geschichtliche Darstellung des ausbruchs der Asiatischen Cholera in Hamburg. Nach Acten und Amtlich angestellten untersuchungen.* Von J. C. G. Fricke, Dr. Hamburg, 1831. 8vo. pp. 92.

A Historical Account of the Occurrence of the Asiatic Cholera in Hamburgh, &c. By J. C. G. Fricke, M. D.

The first case of cholera occurred in Hamburgh on the 5th of October, 1831. At this period no disease had appeared within a circumference of thirty German miles of the city, presenting any resemblance in its symptoms to the epidemic then prevailing in other parts of the north of Europe. The same increased tendency, however, to gastric and intestinal affections, which had been observed to precede the appearance of the cholera, wherever the latter had heretofore manifested itself, had been noticed for several months by the physicians of Hamburgh—by whom the progress of the epidemic was anxiously watched, and its phenomena, as it approached nearer and nearer to the city, studied with the utmost care.

As early as the month of May, so far as it regards quarantines and other restrictive measures, every precaution appears to have been taken to preserve the city from the visitation of the dreaded pestilence.

The first three cases of the disease occurred within the walls of Hamburgh, in a place called the deep cellar, situated in Nicolai street, about three hundred feet from the harbour. This cellar is described as a damp, filthy, unventilated place, many feet below the surface of the earth, into which the water of the river Elb flows whenever the latter rises above its ordinary level. The several apartments into which this cellar was divided, were occupied by forty-one individuals, of both sexes and of all ages—the whole of whom were of the most depraved and dissipated habits.

The first case was reported to the police board on the evening of the 5th of October, by Dr. Hauptfleisch. It occurred in a drunkard, of the name of Peterson, sixty-seven years of age. He had come home about 6 o'clock on the preceding evening, and after partaking of a considerable quantity of sour milk, drank a number of glasses of ardent spirits. Soon afterwards he was seized

with violent vomiting and purging—his extremities soon became icy cold, his feet and hands of a blue colour, his eyes sunken, and he was affected with cramps of the lower extremities. He died on the evening of the 6th.

The deceased had resided for four months in the cellar, and for the last twenty weeks he had not been out of the city, nor had he recently been in company with any foreign sailor, or indeed with any stranger. At the time of his death, there were five or six persons in the same apartment.

The second case of cholera occurred on the 7th of October, in a prostitute, of the name of Bechman, residing in the same cellar. She was attacked about 9 o'clock in the morning, and died at 11 in the evening. Two days before her death, she had been to dig potatoes in the country, about three-eighths of a mile from Hamburgh, and on her return had been completely drenched with rain. She was almost constantly in a state of intoxication.

Another case occurred on the 7th, in the same cellar; this was in a drunkard of the name of Summers; thirty-seven years of age—he was removed to the hospital, where he died on the 9th.

Several other cases occurred in the cellar referred to, before the 11th of October, when the remaining occupants were removed, together with eighty-five other individuals from similar habitations in other parts of the city, to a large hemp magazine, situated in the suburbs of Hamburgh, where they were carefully guarded, and supplied with provisions and other necessaries by the government.

By the most careful and minute investigation on the part of the police board, it was ascertained, that none of the individuals who were attacked by the disease in the cellar, where it first broke out, had been recently in any place where the cholera prevailed, or had had any intercourse with persons who had arrived within a short period from any foreign port.

Between the 7th and 8th of October, in addition to the cases which have already been noticed, a number occurred in various and distant parts of the city, in individuals who had had no intercourse with those previously attacked, nor with each other.

The whole number of deaths from cholera in Hamburgh, up to the 22d of the month, was only three hundred and eight. The number attacked is not given by Dr. Fricke, and of course he presents us with no data from which to judge of its comparative mortality in that city. The cases in which the disease proved fatal, were almost exclusively confined to the lower classes of the population, inhabiting deep, filthy, and damp cellars, or small, narrow, dark, and crowded courts and alleys, into which the rays of the sun seldom penetrate. Most of them were persons of dissipated or very irregular habits. Of the deaths, two hundred and seventeen occurred in men, seventy-eight in women, and thirteen in children. The ages of whom are shown by the following table.

Under 10 years,	13
Between 10 and 20	13
" 20 30	49
" 30 40	73
" 40 50	65
" 50 60	50
Above 50 years of age,	45
	308

In regard to the important question, in what manner was the cholera produced in the city of Hamburgh, Dr. Fricke conceives, that the simple relation of facts, which he has given us in the present work, shows fully, that the disease could not have been introduced from without, nor depended for its origin in any degree upon contagion. Independent of the circumstance of the first cases of the disease in Hamburgh, occurring in individuals who had had no intercourse with any person coming from a port in which the disease prevailed, the following facts confirm the correctness of the author's conclusions.

It is certified by the proper authorities, that up to the 17th of October, no case of cholera occurred in the upper harbour—and only one in the lower harbour. This case occurred in a sailor on board a vessel just arrived from Bahia. He was attacked in the night, between the 8th and 9th of October, and was immediately removed to the hospital, where he died. With the exception of the captain, no one of the crew of this vessel, including the deceased, had any communication with the shore, or with any inhabitant of the city previously to the 10th of October.

In the hemp magazine, to which the persons removed from the deep cellar in which the cholera first occurred, and from other unwholesome localities were removed, there were collected on the 12th of November, two hundred and thirteen individuals, of the lowest classes of the city, the great majority of whom were habitual drunkards. Among these persons, only twenty-seven individuals in all were attacked with the disease; the first case occurring on the 27th of October, the last on the 1st of November.

Among the four hundred nightly watch, who were obliged, almost constantly, to come in contact with individuals labouring under cholera, no one case of the disease occurred.

None of the physicians of Hamburgh were attacked, nor any of the attendants in the hospital.

On the 19th of October, one of the prisoners in the house of detention was attacked, he had been under arrest since the 7th of the month, during which time he had had no intercourse with any persons from without.

In the immediate neighbourhood of Hamburgh, notwithstanding the communication with the city was interrupted, no case of cholera occurred previously to the 23d of October, when it made its appearance in Moorburg. In Bergedorf, one case occurred on the 28th of October, and on the same day the epidemic broke out in Lüneburg—but neither in Harburg or Geesthacht did a single case occur up to the 6th of November.

The work of Dr. Fricke contains much useful information. The account of the weather preceding the appearance of the cholera, the meteorological observations made during the first fifteen days of October—and the table of births and deaths for ten years from 1820 to 1830 inclusive, present many highly important facts, which cannot well be compressed within the limits of a bibliograph.

QUARTERLY PERISCOPE.

FOREIGN INTELLIGENCE.

ANATOMY.

1. *Structure of the Testicle.*—M. Lauth, of Strasbourg, has communicated to the Royal Academy of Medicine of Paris, some researches made by him, relative to the structure of the testicle. His investigations have occupied him two years, and were made upon three hundred testicles at least. M. Lauth states, that the seminal ducts are composed of the following parts: 1st, the *seminiferous vessels*, varying in number from 821 to 855; mean number 840. These are not, he says, isolated, as is asserted, but freely anastomose together, and ramify so as to constitute a large plexus, which constitutes the origin of the seminiferous vessels. These last consequently do not present at their origin free extremities; at least, he says, that he has never seen this last disposition except in a single instance, which he considers as an anomaly. The calibre of the seminiferous vessels filled with mercury, varies from 1-110th to 1-160th of an inch; mean 1-147th of an inch. The length of each, including the anastomosing branches, varies according to the subject, from 13 inches 9 lines to 33 inches, mean 25 inches; consequently, the total length of all the ducts together, is from 966 feet to 2307 feet, mean 1750 feet. The vessels form a number of convolutions, except near their terminations, where they are almost straight, and where they enlarge to from 1-55th to 1-120th of an inch, mean 1-108th of an inch.

2d. The *rete testis*, formed of from 7 to 13 anastomosing vessels, whose calibre varies from 1-50th to 1-108th of an inch, mean 1-79th. It receives the seminiferous vessels.

3d. The *vasa efferentia*, which arise from the *rete testis;* their number varies from 9 to 30; commonly there are from 12 to 14. From their convolutions, which constantly increase in their course, they assume the appearance of *vascular cones.* Their canal, at first very large, (1-55th to 1-80th of an inch, mean 1-64th,) gradually diminishes towards their insertions in the vas deferens; where their size is from 1-108th to 1-180th of an inch, mean 1-156th. These insertions take place successively at distances of from ½ to 6 inches, mean 3 inches.

4th. The *vas deferens*, single, 1-55th to 1-100th of an inch in thickness, commonly 1-78th of an inch; its length varies in different subjects from 16 feet 4 inches to 21 feet 6 inches, mean 19 feet 4 inches. This tube is regularly convoluted on itself in four series of convolutions.

5th. The *appendicula epididymi*, (vascular oberans,) not always existing, rarely double, never ramified. Perhaps it is furnished with valves, which direct the fluids to the vas deferens. This appendicula, M. L. says, appears to him to be mucous gland of a peculiar form, but certainly is not a lymphatic vessel, as has been said.

In a testicle of mean size, the semen passes through a distance of about 21 feet 7 inches to arrive at the commencement of the vas deferens. M. Monro's

estimate of 42 feet, is according to M. L. extravagant.—*Gazette Medicale de Paris, Dec. 10th*, 1831.

2. *A Third proper Ligament of the Scapula, not yet observed in our Dissectors, or by Anatomical Lecturers.* By E. B. Sherriffs, Esq. Brechin.—No ligaments in the human body have been more particularly described, or perhaps better classified by anatomists, than those connected with the *scapula;* neither is any joint more deserving of attention from its surgical relations than that of the shoulder, into the formation of which the *scapula* enters.

The ligaments connected with this bone are described as either proper or common to it. The latter are described as two in number, viz. the anterior, coraco-acromial or deltoid, and the posterior or coracoid. I, however, universally find a third, extending from the root of *acromion* process to the neck of the *scapula*, and hence it may be consistently denominated the *acromio-cervical* ligament. I generally find the *arteria infra spinalis*, along with its accompanying nerve, pass under this ligament.

In exposing this ligament, I must recommend great care to be taken, as it is imbedded in a quantity of cellular substance, and being very weak, it may readily be removed.

I have presented the Hunterian Medical Society with a ligamentous preparation of the shoulder, in which the coraco-cervical ligament is plainly developed. —*Ed. Med. and Surg. Journal, for April*, 1832.

PHYSIOLOGY.

3. *Lymph of the Cerebral Ventricles.*—It has been observed by many authors at the head of whom may be placed John Hunter, that the lymph of the cerebral ventricles does not coagulate either by the action of heat, nor by that of alcohol or of acids; this remarkable difference, since confirmed by Dr. Odier, sufficed to indicate its composition being different from that of the serous fluids of the abdominal and thoracic cavities. A contrary opinion having been adopted by some physiologists, M. Haldat determined to investigate the subject experimentally.

The fluid under consideration is colourless, perfectly transparent, almost inodorous, and with a sensibly muriatic taste; it has little viscidity, does not change the colour of the tincture of marsh mallow; alkalies produce no change; oxymuriate of mercury and the muriate of tin throw down a dirty white precipitate; nitrate of silver forms a coagulum which becomes brown on exposure to the air; the decoction of galls produces a yellow flocculent deposit; finally oxalic acid and the oxalate of ammonia cause a slight white precipitate. These experiments showing the fluid to contain a muriatic salt and several animal substances, to isolate them M. H. resorted to the means employed by Bostock for the analysis of animal fluids, and other known means. The result of these researches show the fluid to be composed of water, 96.0;—muriate of soda 1.5; —albumen, 0.7;—gelatine, 1.0;—mucus, 0.4;—phosphate of soda, and of lime, a trace;—loss, 0.4.—*Journal de Physiologie, Tom. LXXIII. and Bull. des Sc. Med. Sept.* 1831.

4. *Case of Deficiency of the Parietes of the Abdomen and Anterior Wall of the Bladder, with Clinical Remarks.* By *J.* W. Earle, Esq.—The subject of this case is a female, fifteen years of age, who had been under Mr. Earle's care in St. Bartholomew's Hospital five years ago, when he had constructed for her an instrument which materially contributed to her comfort. This instrument having been stolen from her, she has recently applied for another.

Upon examination, the following state of things is now observed. A deficiency of a large portion of the lower part of the parietes of the abdomen, as also of the

anterior wall of the bladder, so that the mucous surface of its posterior wall protrudes forth at the opening in the abdomen. It is a red, vascular, sensitive, pulpy surface, defended by a large secretion of mucus, and which has very much increased in size since her former sojourn in the hospital. At its lower part the enlarged ureters are seen to open, from which a constant distillation of urine is taking place, although she has sometimes the power of retaining for a short time a few drops in the lower ends of these canals, and afterwards ejecting them in a jet. At the upper portion may be observed some cicatrices, the result of some attempts to destroy the sensible mucous surface which had been formerly made in that situation. Half an inch below the protrusion, there are two minute spots, (exuding a milky secretion,) into which a small probe can be passed, and which no doubt lead to the vagina. These openings did not exist when she was before in the hospital, or if they did, they escaped observation, which latter circumstance is not at all probable, as she underwent repeated careful examination, and, indeed, during her stay this time, the central band separating these orifices has been observed to become very much more narrow. This is a very curious fact, for the development of this part would seem to be cotemporary with the approach to puberty, which is now taking place, the uterus also being fully developed, as ascertained by examination by the rectum. There is a portion of skin analogous to a perineum, and above a bifid clitoris, and the rudiments of the nymphæ may be observed. The labia are much separated, flattened, and broader, converging as they descend. A great interval prevails between the ossa pubis, and the recti muscles are widely separated above the protrusion, this space being filled by a firm tendinous expansion and the common integuments. So great a separation of the pubes, of course, removes a great portion of the bony support; the pelvis is widened, and her gait becomes what is called *waddling*, in a great degree. At present the ligamentous connexion between the bones is much firmer, but as large a space as ever exists between them. There is no umbilicus; probably the vessels entered just above the protrusion.

From the consideration of this and other similar cases, we observe that the bladder is not an organ essential to life, although eminently conducive to the comfort and convenience of the individual.

These cases afford us an excellent opportunity of ascertaining the structure and vital properties of mucous membranes, and of exhibiting the fallacy of those arguments which would in many respects identify them with common integument. In the present instance it has remained from birth quite unchanged in its appearance, although constantly exposed to the influence of the atmosphere. It also resisted, in a wonderful manner, when she was formerly in the hospital, the attempts which were made to destroy it, for the purpose of effecting cicatrization, even by the strongest escharotics, being so very speedily reproduced. Haller, and many physiologists since him, have remarked the great analogy prevailing between the common integument and mucous membrane, and indeed some proceed so far as to consider them as mere modifications,* and that in the mucous membrane we have a minute epidermis existing, and also that mucous membrane, upon long exposure, will take on the appearance of common integument. The present case may be said to present a refutation of such opinions. Although the extremity of the rectum, the vagina, the mouth, or even the œsophagus, are lined by a *prolongation* of *skin*, which may very readily become altered by exposure, yet a *mucous* surface cannot be converted into skin. The effects of inflammation have given rise to the formation of pseudo-membranes, and these have been the cause of much illusive reasoning. In the present case the characters of the mucous membrane have been retained, and on attempting, we could not even compel it to take on those of skin. Thus

* "There is a remarkable analogy between the skin and mucous membranes. The latter may be viewed as prolongations of the skin over internal surfaces, modified only to suit the difference of place; or the skin may be said to contain the elements of the mucous tubes, but more firmly and closely wrought, and protected by the cuticle, as the latter are protected by the mucus they secrete."—*Mayo's Physiology.*

also we see in a case of vesico-vaginal fistula a marked difference between the two exposed surfaces of the vagina and the bladder, although they may be contiguous, the one being very slightly, the other highly vascular. We may have an artificial anus for years, and yet no such alteration take place in the mucous membrane. So when the mucous surface of the male urethra is exposed, its sensibility will continue until by some means we destroy such surface.

This case, moreover, affords a good opportunity of putting into practice experiments on the nature of the urine—experiments which, as far as the individual herself is concerned, are perfectly innocent. When she was in the hospital before, Mr. Earle performed a series of such, in order to ascertain the rapidity with which certain substances might be detected in the secretion of the urine after they had been taken by the mouth. Various substances, such as rhubarb, turpentine, asparagus, were administered, but, unfortunately, Mr. E. had mislaid the memorandum containing a detail of the results. He, however, perfectly recollected that the shortest time in which the peculiar violet odour could be detected in the urine, after turpentine was swallowed, was four minutes and a half; the odour peculiar to asparagus in eight minutes: a most extraordinary result, when we take into consideration that the substance must have undergone the process of digestion and absorption, and traversed the round of the circulation, previously to being eliminated by the kidney. It was Mr. E.'s intention to repeat some of these experiments, and try others, relative to the power of medicines in producing an alkaline or acid state of the secretion; an important investigation, as determining how far we can call in chemistry to the aid of medicine in the treatment of certain classes of diseases. This case he considered favourable for trying such, as, in the ordinary mode of doing so, the secretions of the kidney often undergo some changes in the bladder, especially if this viscus be diseased in any way.

This may certainly be termed a very rare case, if we regard the *sex* of the individual; for while there are but seven or eight recorded cases of such malformation in the female, there are at least sixty related of its occurrence in the male.

Among the instances recorded of its occurrence in females, there is one published in the Philosophical Transactions, in which the woman became impregnated and bore a child. In another, reported by Dr. Neville, the umbilicus was natural. Another very interesting case is also recorded by Mr. Coates, in the Edinburgh Medical and Physical Journal.

There are certain characters common to all these cases occurring in either sex, while there are others peculiar to the sex, but which have no reference to the urinary, but to the genital system.

In both cases we have a want of bony union between the ossa pubis, which are, in different cases, more or less separated. This might have been considered as the primary defect upon which all the others hinge; but that in the case related by Mr. Coates, union did exist between the two bones—the urethra passed over the pubes, and was pervious to the extent of half an inch, and then terminated in a cul-de-sac. Moreover, we have in all cases an enlargement and a greater contractile power of the ureters—an absence of the urethra, as also of the umbilicus. In all these circumstances, then, both sexes accord. There are, however, some points of difference. In the *female*, the uterus, ovaries, and vagina, all exist, although this last may be closed. In the present instance, no opening existed formerly, but one is now taking place; and the same would very probably have occurred with respect to the other cases, had they lived to the period of puberty: and, indeed, such a closure as the present need not operate as an obstacle to impregnation, since we see it take place in cases of imperforate hymen which have required liberation by a surgical operation; and in these other cases, if the organs were in a fit state, there could be no objection to making an opening into the vagina. Thus, then, the female has the power of continuing her species, which the male does not possess. In one recorded case, the female bore a child; and there can be little doubt that it would be pos-

sible for this young person to do the same. In the *male*, the penis is invariably short; it may extend an inch in length, being generally broad at the root, and then becoming bifid, there is no prepuce or urethra. In some instances there is an open groove for some distance, with a vascular mucous surface—sometimes a mere slit; at its base is usually the fossa navicularis and the caput gallinaginis. The testes are natural and usually much separated. Indeed, the scrotum being completely divided and separated, has very much the appearance of labia, which, (conjoined to the diminutive penis, being mistaken for an enlarged clitoris,) has given rise to the supposition that these individuals are hermaphrodites. The vas deferens terminates variously—in the ureter, perineum, or even rectum. The venereal passion exists, but the individual has not the power of gratifying it. The anus, in the male, is usually perfect, but placed more forward than natural; though Bertolinus relates a case in which the patient vomited all his fæces for forty years. Littré also relates a case in which there was neither cæcum, colon, or rectum, the ilium terminating in a cul-de-sac.

Dr. Duncan has framed an hypothesis respecting these cases, founded on the supposition of the primary cause being an impervious state of the urethra.

"As soon as the urine begins to be secreted, it will accumulate in the bladder, and distend it, as well as the ureters and kidneys. In the adult, ischuria proves fatal in a short time, both from the rigidity of the containing parts preventing them from yielding to the distending pressure, and from the reäbsorption of an excrementitious matter highly deleterious to animal life. In the early fœtus, however, circumstances are extremely different, in it the urine can contain very litt'e, if any, excrementitious matter, and the whole containing parts are soft and plastic, the bones scarcely cartilaginous, and no where knit together. The bones of the pubes, therefore, yield to the distending pressure, and are separated gradually from each other, until they become so firm that it has no longer any effect upon them. But by this separation of the bones of the pubes the recti muscles are also separated, and the bladder is deprived of its natural support at the anterior portion, while below, behind, and above, it is supported by the bones of the pelvis, spine, and various firm viscera. The whole distending force will therefore act on the anterior portion, which, with the skin, will be protruded forwards, and becoming thinner, will at last give way and burst outwardly. The bladder, no longer able to contain any urine, will contract, and, by the pressure of the abdominal viscera, will be protruded through the ruptured aperture. Thus, in addition to an impervious urethra, we shall find the bones of the pubes separated, the ureters opening externally through a ruptured and inverted bladder, and the ureters and kidneys very much enlarged; which are all essential circumstances of the malformation."

This hypothesis is ingenious, but wholly untenable, as it presupposes the secretion of urine to take place at a very early period of the fœtal existence; and even should this explanation be correct, it does not explain why, when the bladder had given way, the ossa pubis did not approximate and unite in a symphysis. The enlarged state of the ureters is rather referable to the efforts of nature to supply the deficiency of the bladder. Moreover, the case related by Mr. Coates affords a direct contradiction to this theory. It is much more probable that these effects are all of simultaneous occurrence from the same defective formation.

At the conclusion of his lecture, Mr. Earle referred to the case of a child on whom he operated for nævus on the forehead, and who had also a very peculiar malformation of the genital organs. The penis was situated in perineo, and directed backwards, so as to have caused the child to be retromingent, if the urethra had been perfect; this, however, terminated by an open surface in perineo. In this case, at the time of birth there was a firm membrane closing this opening, which was divided before any urine could pass. This case affords additional proof, if any were requisite, against the hypothesis of Dr. Duncan, relative to the probable cause of defective organization of the bladder.—*Lond. Med. Gaz. April*, 1832.

5. *Analysis of Healthy Blood.* By M. L. R. Lecanu.—We noticed in our preceding No. the interesting researches of M. Lecanu into the chemical composition of the blood. The following table, from the *Journal de Pharmacie*, for Sept. 1831, exhibits the different constituents, and their proportions.

Water	780.145	785.590
Fibrine	2.100	3.565
Albumen	65.090	69.415
Fatty matter;		
a. crystalline	2.430	4.300
b. oily	1.310	2.270
Colouring matter	133.000	119.626
Extractive *soluble in alcohol and water*	1.790	1.920
Albuminate of soda	1.265	2.010
Muriate of soda, Muriate of potassa, Carbonate, Phosphate, Sulphate (Alkaline)	8.370	7.304
Carbonate of lime, Carbonate of magnesia, Phosphate of lime, Phosphate of magnesia, Phosphate of iron	2.100	1.414
Loss	2.400	2.586
Total	1000.000	1000.000

PATHOLOGY.

6. Hackmann *on Softening of the Spleen.*—Softening of the spleen is sometimes sporadic, but more frequently it is either epidemic or endemic: in the latter cases it is intimately connected with other diseases which are in themselves epidemic or endemic likewise. *Spleno-malacie* is frequent, not only in the human subject, but is common also among animals, especially among the ruminantia. When sporadic, this affection follows sporadic intermittents; when epidemic, it accompanies epidemic fevers in hot and marshy countries. In the last epidemic which ravaged the north of Germany, softening and hypertrophy of the spleen were phenomena so constant, that Dr. Dohrn even ventured to call the disease *splenitis epidemica contagiosa.* Fevers in Sardinia likewise often terminate in softening of the spleen: this lesion, however, is always the effect of a more general disease; at least, the author has never met with an idiopathic case.

According to the opinion of Hackmann, softening of the spleen depends upon over-congestion, or venous inflammation, of which there are two stages, one of irritation or congestion, and one of true ramollissement. The symptoms of the first are, fever with gastric disorder predominating, but of which the type will vary according to the season, the climate, or the constitution of the patient. In hot and marshy countries, or even in more temperate parallels during the summer, the access of fever is preceded by an ordinary shivering, but the intervals are so slight that it might perhaps be considered a remittent. The rigors, which vary in duration and intensity, are followed by a burning heat, after which a profuse perspiration prevails. At the beginning of the attack, the patient vomits a clear fluid, often mixed with bile; which ejections con-

tinuing during the cold, cease on the access of the hot stage, and recur with the recurrence of each fit. In northern climates, these symptoms diminish as the disease advances; while, in tropical countries, they continue unabated, as the black vomit of the yellow fever will witness. Hæmatemesis only occurs in chronic cases of spleno-malacie. Another essential symptom of this disease is præcordial distress marked by similar exacerbations and remissions with the fever, and which probably depend upon the compression of the diaphragm by the enlarged spleen. This symptom is never entirely absent in any case, and sometimes it is developed in so great intensity as to become truly *orthopnœa*.

Of other diagnostic signs of this disease the principal are, great lassitude, pains in the limbs, vertigo, flushed face and eyes, and great thirst, (which, if satisfied, increases the præcordial pain;) the tongue at first is of a pale red, and covered by a yellowish fur, by degrees it becomes of a bright red, and cracks; but it remains generally moist, and is often studded with aphthous eruptions. The abdomen is swelled, soft in the umbilical region, but not tender, pain being only felt when the body is bent and pressure made towards the stomach or spleen. In the epigastrium, a very sensible pulsation may be perceived; and as the disease advances, this pulsation extends also to the region of the spleen. Most frequently the fever is ushered in by diarrhœa, (ten or twelve evacuations in twenty-four hours;) the matter passed being dark-coloured, greenish, watery, and very fetid. It is during the feeble exacerbations that the stools are most frequent; and this circumstance, joined to the vomitings, gives to the disease an appearance of cholera. The patients are excited, they sleep but little, wander much, and become delirious; the pulse is variable, at first full and soft, afterwards becoming small and very frequent; sometimes, however, it does not vary much, but remains slow, and occasionally intermitting.

The stage of ramollissement seems to be shown by a great collapse, and the access of typhoid symptoms, and death ensues as in cases of fever, or follows a state of coma resembling apoplexy. This apoplectic state is a phenomenon that frequently occurs in ramollissement of the spleen.

The progress of *spleno-malacie* is, in general, rapid, like that of the fevers of which it is the result; thus, ramollissement may take place in the course of eleven or twelve days. Still the disease may assume a chronic form, as two cases recorded by Bonet and Portal, and one observed by the author, have sufficiently shown.

There are different degrees of ramollissement: in the first, the spleen is gorged with blood of a black or dirty brown colour, amongst which the reticular tissues cannot be distinguished; the structure is more friable than when in a healthy state, and pressure will discharge a great quantity of dark-coloured blood, so that there will remain nothing but a sac containing black blood, and a soft matter resembling chocolate.

In the more severe forms of ramollissement, the spleen bursts spontaneously, without any previous violence, during the life of the patient, and the matter escapes into the abdominal cavity, when death speedily ensues. The volume of the viscus thus softened is not always much increased, but most frequently the bulk is considerably augmented if the individual has suffered from endemic intermittent or remittent fever.

Of the mode in which ramollissement of the spleen is effected nothing more is known than of ramollissement in general; however, most pathologists agree that such morbid alterations result from sanguineous congestion and inflammation, disorganizing the viscus, and ending in gangrene.

Towards the conclusion of his memoir, the author relates eight cases of acute spleno-malacie, extracted from the writings of Heusinger, Grotanelli, Montfalcon, and Bailly, and one chronic case which fell under his own observation.—*Lond. Med. and Phys. Journ. from Hacker's Litterarische Annalen.*

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7. *Abscess in the Parietes of the Left Ventricle of the Heart.*—An instance of this has been met with by M. C. Broussais, in a young soldier who died in the

military hospital of Gros-Caillon, of confluent small-pox. The matter of the abscess was white, homogeneous and fluid, and was contained in a cyst.—*Gaz. Med. Feb.* 11*th*, 1832.

MATERIA MEDICA AND PHARMACY.

8. *Mode of Distinguishing the Resin of Scammony from that of Jalap and Convolvulus Arvensis.* By M. Planche.—"The resins of jalap and scammony, too often confounded in medical practice, merit to be distinguished as much on account of their manner of acting on the animal economy, as on account of the phenomena to which they give birth when in contact with chemical agents. For example, the resin of jalap is soluble in alcohol, and insoluble in ether. It is dissolved cold in nitric acid without disengagement of nitrous gas; whilst, on the contrary, the resin of scammony is soluble both in alcohol and ether, and dissolves itself in nitric acid, with the production of nitrous vapour. The resin of soldanelle deports itself with these three agents nearly in the same manner as that of scammony, and although the smell and taste are very different in these two resins, and scarcely permit their being confounded, a young physician has remarked to me, that the characters which I have selected are not sufficiently prominent.

"However little foundation this objection may have, I have attempted by new experiments to remove it, and after several trials, I hit upon the following means of diagnosis.

"Pure milk from the temperature of 10 degrees above 0 on the centigrade scale up to the boiling point, *divides perfectly, and holds in suspension, the resin of scammony.*

"Under the same circumstances, pure milk brings together, and unites into a mass, the divided molecules of the resins of soldanelle and jalap. In this instance two results are produced; first the discovery of an excellent criterion for the resin of scammony, which enables the inquirer to decide, upon the instant, whether this resin be adulterated with that of jalap or bindweed; and the second result is, the attainment for the scammony of a vehicle of which the savour is generally pleasing, and which may be sweetened or aromatized according to the taste of the patient. The following formula I think a convenient one; it affords an excellent dose in obstinate constipation, especially in women. Take of resin of scammony of its natural colour or decolorated with animal charcoal *eight* grains; white sugar *two* drachms; eau distillée de Laurier cerise, *three* minims; cow's milk hot or cold according to the taste of the patient, *three* ounces. The scammony is reduced to powder by trituration in a mortar. The milk gradually added, and finally the sugar and aromatic water."—*Journal de Pharmacie, April,* 1832.

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9. *Process for preparing pure Muriate of Morphia.* By Montgomery Robertson.—"Having now finished my illustrations of its medicinal effects in a state of purity, I shall direct the attention of my readers to what appears to me the best mode of securing this, and the readiest method of ascertaining it. And as I intend subsequently, to point out a way of obtaining, not the muriate only, but any other salt of morphia, in a state of purity, and in as far as its individual composition will allow, of uniformity also; I shall take a brief view of former processes, that the value of the improvements may be more clearly seen.

"Until the introduction of the muriate into medicine, the salts of morphia were prepared on a plan divisible into four stages; which had for their ostensible objects, the separation of the active from the inert principles,—the isolation of the morphia,—its decolorization,—and its recombination with acids. The first was accomplished by dissolving the salts contained in opium,—the next by decomposing them with an alkali,—the third by treating the precipitate

with charcoal and alcohol,—and the last by dissolving the product in an acid. Latterly, comparative purity had been obtained by decolorizing a salt of morphia, which was afterwards decomposed to procure the alkaloid for recombination. The first step has been effected at different periods by means of water, hot or cold, acidulated or plain; or lastly, by fermentation. In whatever way it is made, the infusion contains a free acid, more or less resinous colouring matter, solutions of morphia and of narcotine. The three last, intimately blended, are thrown down on the addition of ammonia; animal charcoal, and repeated crystallizations in alcohol, remove the colouring resin; but the narcotine passes untouched through all these ordeals, and from its similarity to morphia, has been generally mistaken for it. This impure product being dissolved in the acetic or sulphuric acids, the liquid is evaporated to dryness; and thus the narcotine remains mixed with the resulting salt, either in a crystalline form, (if, as Robiquet asserts, it be crystallizable,) or in the shape of a transparent coating, enveloping its particles.

"Some chemists, indeed, as Merk and Wittstock, have, by ingenious and expensive processes, obtained morphia perfectly pure. But I speak of the alkaloid as it is generally manufactured; when the object of the pharmaceutist being merely to procure a saleable article, purity is little valued, and not particularly sought after, when it is obtained at the expense of considerable diminution in quantity.

"It is easy to observe that the complication of treatment which these processes require; the combinations, decompositions, solutions, and crystallizations which they enjoin; the evaporations and filtrations which they direct; cannot be completed without considerable expense of time, labour, and material. But by introducing into medicine the muriate of morphia, and publishing a mode of preparing it, Dr. Gregory rendered the latter part of these processes useless, and abridged much that was tedious and objectionable. I have now to propose an improved method: which, by curtailing still further the necessary operations, will render the preparation of the muriate, much more easy and economical.

"This process has for its prominent feature the employment of *double* decomposition; a plan which secures at one step the separation of the meconic acid,—and the union of the morphia with muriatic acid. The liquid employed to effect this decomposition is the muriate of lime; an article whose cheapness renders economy in its use no object. Perhaps in other places, muriates may be found more suitable, for other reasons, but this one seems to me best calculated to enable us to procure, on the one hand the meconic acid free from colour, on the other the muriate of morphia free from narcotine.

"The first step of the process resembles that of all others, in as far as the solution of the active principles is concerned. The opium, cut in pieces, is macerated in water at a temperature not exceeding 100° F.; as it softens it is worked up into a pulp, and frequently stirred during the course of exhaustion; the infusion, as it becomes saturated, is drawn off clear, and may be immediately subjected to evaporation.

"This evaporation is conducted in a large vessel of tinned iron; and a sufficient quantity of marble, in coarse powder, is added to saturate the free acid. The muriate of lime used should contain no iron, lest, in combination with meconic acid, it give a deep colour to the liquid, difficult to be got rid off; and the quantity required for each portion of infusion, is best learned by experience. When the infusion has reached the consistence of syrup, an excess of muriate of lime is poured in, and the boiling is continued for a few minutes longer. Then the whole may be emptied into a large basin, and when cold, diluted with water, until a copious separation of resinous flocks takes place. In this way most of the meconate of lime, which is nearly insoluble, and a great quantity of colouring matter, are got rid of;—the separation of the latter being the more copious and complete, the more concentrated the liquid is before dilution, and the nearer that dilution approaches a certain point; after which,

further dilution causes the flocculi to be partially redissolved, and to render the filtered liquid turbid.

"When these flocculi have subsided, the clear part is evaporated as far as possible, on a sand-bath; a small bit of marble being put into each dish to neutralize any free acid, and the fluid being poured off the sediment before it is permitted to crystallize. We may, at this stage, prove whether enough muriate of lime has been added, by trying if a little of the clear liquid will, aided by heat, separate meconate of lime from an equal bulk of concentrated infusion. When about to consolidate, it is stirred into a uniform mass, from which, enclosed when cold in a stout cloth, the dark fluid is expressed as completely as possible. The cake of impure muriate is dissolved in water at 70° F., and the solution filtered through cloth; whereby a large quantity of impurities will be separated without loss; the liquid, to which a small portion of muriate of lime is added, is now reëvaporated, neutralized, and treated in other respects as before. In the next evaporation the liquid, now completely free from meconate of lime, is slightly acidulated; a judicious suggestion due to Dr. Gregory, who has observed that the acid renders the colouring matter more soluble, and thus more completely separated, when the product is expressed for the third time. The muriate, which is now of a light brown colour, is next dissolved in boiling water, carefully neutralized with chalk, and mixed with animal charcoal; which, provided it do not contain a free alkali, requires no purification. Fresh portions of hot water should, from time to time, be added, until there is enough to keep the salt in solution when the liquid cools; and the whole is to be frequently stirred, that the most may be made of every particle of charcoal. The temperature should not permanently exceed 190° F. lest any of the muriate be decomposed. If the charcoal be good, and in sufficient quantity at the same time that the liquid is dilute, and frequently agitated, twenty-four hours of contact is sufficient to decolorize it so far, that on the addition of a little acid to the filtered liquid, it becomes almost colourless. This effect produced on the colour by the addition of an acid, (and any acid will do,) I cannot explain. It was first observed by Dr. Gregory, who has also remarked that muriatic acid, added to a neutral solution of muriate of the specific gravity of 1.020, when cold, and in which there is no appearance of crystallization, causes it in a short time to become a mass of crystals, which, when dried in the air, are perfectly neutral.

"The mass that results from the evaporation of the decolorized liquid, is subjected to pressure in portions of about six ounces each, tied up in well-washed cotton cloth; the superfluous ends of which are cut off, in order to prevent them from making the surface of the cake irregular. They are next put into a stove heated to about 100° F. where they remain until almost dry, when the cloth is removed and the coloured surface scraped off. After being pounded and dried, *till no more weight is lost* at a temperature of about 150° F. the muriate resembles chalk in colour and appearance, is permanent in the air, and is fit for medical use. If a little be now dissolved in distilled water, and pure potash added, crystals of morphia are presently separated, which are completely redissolved on the addition of an excess of the alkali, the absence of the characteristic milkiness, changed by heat to woolly flocks, indicating a total freedom from narcotine. A very few coloured flocculi may remain, so inconsiderable in weight as to be of no moment, and totally removed by filtration; as is any remaining yellow tinge by a fresh crystallization, if the liquid be previously well acidulated.

"In this process, if properly conducted, the loss by manipulation is trifling. The whole of the morphia is separated in a solid form in the first and second crystallizations, provided there be present in the liquid a slight excess of muriate of lime, and the evaporation be carried far enough. The great deliquescence of the muriate of lime apparently facilitates the completeness of this separation. The dark liquids expressed on these two occasions may therefore be deemed void of muriate; the mother liquids of future crystallizations, as well as

the water in which the cloths have been rinsed, are added to a portion in an earlier stage of advancement; and the coloured particles scraped from the cakes, may be joined to that about to be treated with charcoal. It is absolutely necessary that all the neutralizations be made with lime, (marble will not decompose the warm liquid, nor chalk the cold,)—that all the evaporations be carried as far as possible before setting aside to crystallize—that the mass be always stirred when consolidating—and that the mother liquids be expressed very completely from the crystals, enclosed in a cloth. The charcoal does no good until most of the resin be separated, and leaves a dark tinge in the liquid, only to be removed by acidulating. A moderate excess of muriate of lime is proper, too much renders the mass clammy, and the mother liquid difficult to express; too little causes the decomposition to be incomplete, and the muriate that is formed refuses to crystallize; but these errors are easily remedied.

"In the last experiment that I made, 54½ lbs. Avoird. of good opium were macerated at once. This quantity had lost one pound and a half of its weight previous to infusion, by standing for three months in the laboratory, having been previously reckoned 56 lbs. From it were obtained, by the process just described, 91½ ounces troy of muriate, or rather more than 11½ per cent. Several accidents happened during the preparation, from the breaking of dishes; besides the opium was not completely exhausted, nor were the mother liquids collected with due regard to economy, or I have no doubt the other ½ per cent. might easily have been made out; and 12 per cent. is, in my opinion, the utmost that can be expected from ordinary opium, losing from 8 to 9 per cent. by drying. The cost of manufacture, including the price of the opium, &c. amounted to 17s. 6d. the ounce troy. This then may be reckoned a fair trial of its success on a large scale.

"With regard to the adulteration of this article, for I fear that adulteration, though easy of detection, will still be attempted; the most likely manner of increasing its weight will be, not to deprive it completely of moisture. This may be detected, simply by ascertaining how far heat lessens the weight of a certain number of grains, and druggists are entreated to take particular care to avoid using muriate that is not perfectly dry; as this, which may proceed from accident as well as design, is, more than any other cause, likely to impair the uniformity of its preparations. In the state of powder it may, perhaps, be mixed with chalk, magnesia, starch, carbonate of baryta, sugar, and other white powders; a species of adulteration which may be completely prevented by preparing it in crystals. But as this requires more time and manipulation, I may here observe, that all insoluble powders are detected by its solubility in hot water, starch by iodine, and sugar by the taste, and the form of its crystals on evaporation. I may here too mention, that I have seen in chemical works, particular cautions given to avoid the fumes of boiling infusions of opium, as if they were highly deleterious. But though engaged for many months in examining the component ingredients of opium, and though I have been exposed for hours together to the concentrated vapours of infusions, I have never experienced the slightest inconvenience therefrom; nor do I believe there is the least particle of narcotic principle contained in them.

"These are all the particulars I have to mention with regard to the manufacture of the muriate of morphia. I come now to describe a method, by which any other of its salts may be prepared in a state of purity, from crystals of impure morphia.

"For the principle on which this process is founded, I am indebted to M. Buisson of Paris, who states in his Thesis, that the salts of ammonia are decomposed at an elevated temperature, by the salifiable vegetable bases. On trial, I found that morphia, boiled in a salt of ammonia, displaced the volatile alkali, while narcotine had no such power; and that, when morphia, mixed with narcotine, was boiled in muriate of ammonia until no more ammonia was driven off, the narcotine was left undissolved in the form of powder, while the morphia had disappeared. In order then to form a pure salt of morphia from a

mixture of the alkaloids, I boil them in a little distilled water, dropping in, carefully, a neutral solution of the acid in combination with ammonia, until, on a further addition, no more fumes of ammonia are exhaled. The liquid is then filtered, to separate the narcotine; the morphia may be obtained by precipitation. It is proper to remark, that the crystals must be tolerably free from resin, in order that a perfect separation take place; and that the colouring matter, also, seems to have the power of decomposing the ammoniacal salt. This process may be hereafter useful in rendering narcotine pure,—a principle which, it is probable, will ere long become more esteemed in medicine, than it has hitherto been. It may be modified in various ways, to suit the convenience of the operator; and is a great aid in the examination of small portions of opium; as in estimating the value of a sample."—*Ed. Med. and Surg. Journ. April*, 1832.

PRACTICE OF MEDICINE.

10. *Convulsive Disease of Children.*—In our last number, we noticed a convulsive disease of children observed by M. Jadelot of Paris. It appears that this affection has been also noticed by M. Guersent. Two cases treated by him at the *Hopital des enfans malades* are related in the *Gazette Medicale* for 25th Feb. last. M. G. denominates the disease *idiopathic contractions.*

As attention appears not to have been sufficiently drawn to this disease, we translate the following remarks on its diagnosis and treatm nt from the number of the Gazette just referred to.

Contraction may be either symptomatic or essential. In the first case, it is connected with an inflammation of the brain or spinal marrow or their envelopes. It presents itself in the course of fevers whether these be continued or intermittent. At the period when the two preceding cases were observed, there was an infant in the wards affected with meningo-encephalitis, which presented a permanent contraction of the left arm. M. Guersent has seen the case of a young girl in whom there was a contraction of both arms, arising from a cerebral congestion connected with deranged menstruation. Rigid spasms of the muscles frequently show themselves in hysteria.

Essential contractions, on the contrary, appear independently of all organic lesion. They are superficial or deep. It is only to these last that the term of tetanus should be exclusively applied. These cases are attended with severe symptoms, a greater or less derangement or difficulty in deglutition, respiration, circulation of the secretions, indicating an alteration in the pharynx, heart, stomach, &c. the muscular fibres of which are the seats of tonic spasms analogous to those observed in superficial muscles. From all this it may be easily conceived how symptomatic trismus occasioned by a slight wound may cause death in less than twenty-four hours.

Superficial contractions are never accompanied with any notable derangement of the functions of digestion, respiration and circulation. Respiration is interrupted only when the muscles concerned in this function are themselves affected. Superficial contractions are sometimes general, sometimes local. Among these last, we ought to range torticolis, cramps, tonic spasms of the muscles of the sides, &c.

Under the name of torticolis, very different diseases have been described. This affection is characterized by a permanent rigidity of one or more muscles of the neck, with an inclination of the head and an absolute impossibility of turning it. The muscles affected, the length and thickness of which diminish at the same time that they become harder, form inflexible chords beneath the teguments which prevent the head from resuming its proper position. This affection most commonly arises from the impression of cold upon the neck. Sometimes it only remains twelve, twenty-four, or forty-eight hours; at others

it assumes a chronic form. It should be distinguished from rheumatism in which motion though not impossible is difficult and attended with pain. It ought not to be confounded with articular inflammation of the first cervical vertebra which occasions analogous symptoms.

Cramp is a contraction of the muscles of the legs and arms, and principally those of the calf. The tension of these organs takes place without any evident shortening, being attended with pain more or less acute. It is produced by the most opposite causes, lasts sometimes a few minutes, whilst at others it is protracted to eight or ten days and even during whole months. M. Guersent has seen cases of it in children. The pain is in an inverse ratio to the duration of the disease. Very acute at first, it diminishes as the disease assumes the chronic form. M. Guersent has observed contractions of the muscles of the leg in two children of the ages of ten and twelve years, which continued for two years. One of these was attacked with croup during the continuance of the disease and died. The autopsy was made with the greatest care, but no appreciable alteration was observed either in the brain or spinal marrow. The nerves, carefully dissected, exhibited nothing unnatural. But the muscles were in a state of hypertrophia, their pale tissue being filled with a considerable quantity of fat.

The subject of tonic spasm of the muscles of the flanks with corresponding shortening of the parts, has given rise to an interesting treatise published by M. Thibert, which contains many cases observed in the hospital "des enfans." Beclard has noted one case in his civil practice. A child, seven or eight years old, was suddenly seized with lameness attended with shortening of the right inferior extremity. An intelligent surgeon having been called in, had leeches and blisters applied, believing the case an affection of the coxo-femoral articulation. Beclard recognised a tonic spasm of the muscles of the right flank, prescribed a suitable treatment and the child completely recovered.

Sometimes the muscular contractions of the members affecting a great many parts are in some degree general. Almost all the muscles of volition are liable to spasm, as was seen in the patient which formed the subject of the first case. In this instance there was immobility and stiffness of the trunk and members, as though the body was composed altogether of hard and solid parts. This contraction, although it affects a great number of parts, does not, so long as it is confined to the spinal nerves, endanger the life of the patient; but it becomes much more serious when it extends to the encephalon and ganglionic nerves, as in traumatic tetanus.

The seat and nature of this disease are altogether obscure. It does not, it is true, always terminate in death, but when it does so terminate, dissections afford no light. M. Guersent has always found the brain, spinal marrow, and nerves free from any alteration. There is nevertheless a modification of innervation, and consequently an alteration of the nerves which are the agents of this, but such alteration is not appreciable with our means of investigation. Particular cases, where the muscular tissue offers an alteration from nutrition, are to be excepted.

The etiology of essential contractions is quite obscure. These manifest themselves most frequently in weakly and puny children, and in such as are addicted to vicious habits, nervous irritations, or convulsions. Among the occasional causes, exposure to cold whilst the body is perspiring, may be enumerated as one of the most powerful. It is well known that the rigidity of the sterno-mastoid muscles is usually produced by a draught or *coup d'air*, as it is commonly called. Lastly, the presence of worms in the intestinal tube and traumatic lesions, are regarded as causes of convulsions. Most of the causes seem to have been united in the case first cited.

Treatment of Essential Contractions.—If an individual of a sanguineous, vigorous habit, be suddenly seized with contractions, we should not hesitate to resort to one or two general bleedings. Sauvages gives the case of a gardener, who having entered into a pit whilst his body was covered with perspiration, was suddenly seized with a general contraction. He was at first treated for an

acute pleurisy, and afterwards took diaphoretics and narcotics. He recovered in seven days. With very young, weakly and puny children, warm baths, vapour baths, frictions with the oil of sweet almonds, or with a liniment containing laudanum are usually resorted to. M. Guersent thinks that opium ought not to be administered internally to children affected with contractions, except where its external use in the form of frictions is unsuccessful. Its internal use is not however so dangerous as has been commonly supposed.

We have seen it produce wonderful effects in some cases, and infants have occasionally taken enormous doses without showing any symptoms of congestion, the relief taking place on the first manifestation of the narcotic operation. Moisture of the skin is in general one of the most favourable signs, and this has led to the employment of diaphoretics, such as infusions of borage, the acetate of ammonia, &c. Dry frictions to the skin, vapour baths, bags filled with warm ashes, all contribute to the same effect. Purgatives should be resorted to for the purpose of keeping the bowels open. Dr. Hamilton has recommended their use and quoted cases showing their efficacy. Some English physicians have spoken of great advantages derived from the employment of the subcarbonate of iron, the doses of which they have carried to an enormous extent, (half an ounce daily.) It was administered unsuccessfully to the patient mentioned in the second case.

Contrivances to produce extension have been tried, and have succeeded in some instances where their employment has been seconded by the assistance of baths, emollients, &c. Extreme measures have sometimes been resorted to in some cases, such as the section of the muscles, but as this painful means was not successful, it has been entirely renounced.

For the purpose of procuring the introduction of fluids into the mouths of newly-born infants affected with trismus, it is useless and even dangerous to introduce the gum elastic cannula through the nares, it being sufficient to hold the infant in a lying position with its head strongly drawn backwards, and then introduce a tea-spoon between the dental arches and the sides of the cheeks. In addition to this, baths, diaphoretics, and gentle laxatives, if constipation exist, should also be tried.

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11. *A Case of severe Dyspnœa, succeeded by Epilepsy, and cured by counter-irritation of the Occiput and back of the Neck.*—Communicated by W. Romney, Esq. Surgeon, Worcester.—"Thomas Watmore, aged 25, a prisoner in the county goal, under sentence of transportation for life, was brought from the tread-wheel to the hospital of the prison, on the 23d of March, 1828, with very hurried and feeble respiration, amounting to panting; a small and quick pulse, and great depression of spirits; countenance pale; tongue clean; bowels rather confined. There was neither pain, cough, nor mucous rattle, on inspiration. The inspirations were from 100 to 120 in a minute, and attended with a quick tumultuous action of the abdominal muscles. He bore pressure without pain, on every part of the abdomen, which was free from fulness, hardness, or tension. He was immediately ordered to bed, and a dose of calomel, a saline purgative, and some warm gruel, were given. He passed a sleepless night; the bowels acted freely; but in the morning, there was no amendment of his respiration. I took some blood from his arm, but faintness ensued, when only a few ounces had been lost. He seemed rather better in the evening, but passed a restless night, from the distress and hurry of his breathing.

"March 27th.—On repeating the bleeding this morning, although he had no dread of the operation, he suddenly became extremely faint, and respiration being suspended, apparently from spasm of the diaphragm, he had nearly expired. Camphor and opium were now had recourse to in considerable doses, but with no good effect. A dozen leeches were applied to the epigastrium, which bled freely, and he got a warm bath of the temperature of 90 degrees. He then appeared relieved for a few hours, but the hurried breathing returning, the leeches were repeated, followed by the warm bath, and a large blister to

the epigastric region; and his bowels, which were confined, were relieved by castor oil. In spite of these and similar remedies, the hurried breathing, sleepless nights, and mental despondency, continued with very few and short intermissions till the 26th of April, on which day his respiration suddenly became more hurried than ever, and this distressing affection continued unabated for several days and nights, depriving him almost of the power of speaking, and totally of rest. This state was succeeded by the most violent epileptic fits I ever witnessed, requiring, with only short intervals, four men to hold him for several days and nights. These fits left him very exhausted and weak, and the respiration remained unimproved. He was in this state when I requested Dr. Malden to visit him, who gave it as his opinion that the peculiar dyspnœa had, in all probability, depended upon irritation of the cervical portion of the spinal chord, and that the supervention of the epilepsy might be accounted for upon the supposition of this irritation extending to the base of the encephalon. With these views, he recommended the whole back part of his head to be shaved, and covered with a large blister, discharge to be encouraged from it, and before the blister healed, a seton to be put in the back of his neck. These directions were strictly followed. From this time he had no return of epilepsy; the dyspnœa also gradually went, and he had no relapse, although he remained in the prison some months afterwards.

"As I did not take notes of this case from day to day, I have not been able to supply all the dates, but my memory in the narration of it has been assisted by reference to my weekly journal.

"This poor man laboured under the greatest depression of spirits, arising from his sentence of transportation for life, of which he always spoke in the most desponding manner to the other prisoners. This I suspect to be the remote cause of his attack, and not the exertion on the tread-wheel, from which I have never witnessed any bad effects. I find he had always enjoyed good health previous to his imprisonment, and had never had fits or any similar attack before."—*Midland Med. and Surg. Reporter, for May*, 1829.

OPHTHALMOLOGY.

12. *Muscæ volitantes.*—M. Neuber attributes muscæ volitantes, to the presence of certain parasitic productions, analogous to the microscopic algi. He thinks that these anomalous productions have their seat in the aqueous humour, and in support of this opinion, he cites a case related by Rust, in which the muscæ volitantes disappeared after the evacuation of the aqueous humour. The therapeutic indication would be to destroy the parasites or to separate them from the tissue where they have taken root. M. Neuber thinks that we may perhaps succeed in destroying them by the employment of the negative pile of a galvanic pile, but he adduces no fact in support of this conjecture.—*Bulletin des Sc. Medicales, Sept.* 1832.

13. *Observations on Cataract.* By Dr. Fabini, of Pesth.—Of 500 persons affected with cataract, in the principality of Siebenburgen, 268 were males, and 232 females. Of these 500, 14 were from 1 to 10 years of age.

"	16	"	11	20 "
"	18	"	21	30 "
"	18	"	31	40 "
"	51	"	41	50 "
"	102	"	51	60 "
"	112	"	61	70 "
"	109	over	70	

Dr. F. has operated upon 107 individuals, of whom 6 had both eyes operated upon. Of these operations, 7 were by keratonyxis, 2 by depression, and 100

by extraction. In all those upon whom the operation of keratonyxis was performed, the crystalline was soft; but absorption always took place: but when the pupil was dilated, some fragments of the crystalline were perceived, which impeded vision a little on the approach of night. In consequence of this, and not having met with any inconveniences from extraction, Dr. F. has abandoned this operation. The operations by depression were not attended by any success; in the first case, the crystalline remounted in part, and in the other closure of the pupil resulted. Of the 100 persons operated upon by extraction, there were but 94, the result of which is known to Dr. F. Of these 94 operations, of which 9 were performed on persons less than thirty-one years of age, there was no case of failure.

5	from 31	to 40	years,	1	failure.
13	" 41	50	"	1	"
26	" 51	60	"	10	"
37	" 61	79	"	10	"
4 upwards of	71		"	1	"

Of these 23 failures, two presented after the removal of the crystalline, amaurotic amblyopia; in a third it was necessary to leave in the eye the opaque capsule of the crystalline. The want of success arose in 11 cases from iritis, produced by the operation, and in 8 cases from chemosis. The most unfortunate complication was that of arthritis. Among those operated upon, in whom inflammation had been destructive of the organ, 12 had been subject to arthritic affections, 1 had œdematous feet, 2 had a soft and flabby constitution, 1 had cancer of the nose, and 3 were free from all complication.—*Bull. des Sc. Med. Oct.* 1831, *and Journ. der Chirurgie und Augen Heilkunde, Band. XIV.*

14. *Exalted Sensibility of the Retina.*—In this affection, accompanied with lachrymation, and without visible inflammation of the globe, M. Lisfranc has found the greatest advantage from rubbing the extract of belladonna around the orbit of the eye.—*Gazette Medicale, March 17th,* 1832.

SURGERY.

15. *Chloruret of Lime and of Soda in the Treatment of Venereal and other Ulcers.*—Dr. Mene of Vaugirard, speaks very favourably of these remedies in the treatment of venereal ulcers of the prepuce, amygdala, and palate, &c. In one patient in whom the greater part of the glans had been destroyed by chancres, a cure was effected in eight days by repeated lotions with the chloride of lime. Dr. M. has derived equal advantage from these lotions in atonic ulcers, which resisted all other remedies employed to produce cicatrization. They were healed by washing them with the chloruret and afterwards covering them with compresses steeped in that liquid.—*Gaz. Med. Feb. 11th,* 1832.

16. *Excision of the Head of the Femur.*—Mr. White of the Westminster hospital is said to have removed four inches of the femur in a very bad case of hip disease, which in all probability would have terminated fatally; the boy's health improved after the operation and a very useful joint was formed between the upper extremity of the femur and pelvis. The limb was not so much shorter than the other as might have been expected from the length of the removed portion of bone. The boy at the period of the operation is said to have been about fourteen; he lived eight years after, having the perfect use of the limb and then died of phthisis.

The whole pelvis, joint and upper part of the thigh were removed after death, and are deposited in the Museum of the College of Surgeons.—*Med. Gaz. March,* 1832.

17. *Ligature of the External Iliac in a recent wound of that Artery.*—There is no longer any novelty in the application of a ligature to the external iliac for the cure of aneurism, that measure having now been had recourse to in upwards of forty cases. In wounds of that artery the patient usually dies from hæmorrhage before surgical assistance can be obtained. M. VELPEAU surgeon of La Pitié, has however, recently been so fortunate as to arrive in season to a person who had wounded the artery in question with a knife, to apply a ligature to it. It was attended with complete success. The case is recorded in the *Gazette Medicale*, for the 4th of February last.

18. *Wound of the Carotid Artery, followed by Aneurism, and cured by Ligature.*—An instance of this, is related in the *London Medical Gazette* for April last, by E. F. DEHANE, Esq. The patient was a delicate girl, ten years of age, who, in going down stairs with a dish in her hand, slipped, and in her fall, broke the dish, a sharp point of which punctured the neck. On Mr. Dehane's arrival a few minutes after the accident, he found the patient bleeding profusely from a wound, large enough to admit the end of the finger, about an inch above the clavicle, and in the course of the carotid artery. About two pounds of blood had been already lost, the patient's lips were pallid, her skin cold and clammy, and the pulse at the wrist not to be felt. Being doubtful whether the patient would revive, Mr. D. immediately applied a compress of lint over the wound, and caused it to be retained there by pressure, and in the meantime prepared ligatures, &c. to secure the bleeding vessel; but was surprised, upon its removal, to find that there was no hæmorrhage, notwithstanding she had very much revived from the state of syncope she had fallen into. He, however, waited some time, under the expectation of its renewal, but which did not follow, owing, probably to the obliquity of the puncture. He therefore secured the compress, and, having placed the patient in bed, left her. The fifth day afterwards when the compress was removed, the external wound had healed, but there was a small pulsating tumour a little above the puncture. He desired the child to be kept quiet, and continued the pressure both upon and below the tumour, as tight as it could be borne; it, notwithstanding, gradually increased, but not so much as to be very perceptible till the night of the 19th, when it suddenly became enlarged to the size of a walnut, pulsating under the sterno-cleido mastoideus muscle, and extending beyond it, and evidently in the line of the carotid, upon pressing which all pulsation in the tumour ceased. At his visit on the following morning, he proposed to take up the vessel, which was immediately assented to by the parents.

The operation was performed January 20th, in the following manner. The patient being placed on her back, with her head inclining over the left shoulder, Mr. H. commenced an incision from the base of the tumour, following the course of the sterno-mastoideus muscle along its inner edge down to the clavicle. More difficulty was experienced in getting at the vessel than had been anticipated, the space between the base of the aneurism and bone not exceeding one inch, which small space was crossed by the thyroid veins, and moreover the depth of the cellular membrane was considerable, so that he could barely feel the vessel with the point of his finger by forcibly pushing back the sterno-mastoideus muscle. Mr. H. therefore found it necessary to extend the incision in a direction upwards and backwards, somewhat above the tumour; by doing which, he was at length enabled to get a sufficient space to pass his ligature round the vessel. This, however, he was unable to effect with the common aneurismal needle, but succeeded with an eyed-probe, which he bent to an acute angle and passed under the artery, armed with a single silk ligature; this being drawn tight, all pulsation stopped in the tumour. The operation was thus concluded without any further loss of blood than the trifling quantity which followed the first incision. The ligature came away on the 31st of January, and before the middle of February the wound had quite healed, and the aneurismal tumour was scarcely perceptible.

CHOLERA.

19. *Cholerine and its Treatment.*—Since the appearance of the cholera morbus among us, it has been conclusively demonstrated, that the disease is produced by an epidemic influence; that is to say, that it has not been imported from abroad, and that it has not arisen spontaneously without having been preceded by successive modifications of the economy. These truths are too generally admitted to require additional demonstration. Let it be borne in mind, that for more than six months past, a large proportion of the population of Paris and France have experienced derangements of the digestive functions, which were necessarily the prelude of the epidemic. These disorders did not affect the whole population, any more than cholera attacked every individual. There were only certain constitutions, those which now compose the class of cholera patients, who were attacked with them. By the changes in the weather, and by the progress of the epidemic constitution, those individuals who were most susceptible of its influence, were finally subjected to its full effects, and were attacked with cholera. Others, as those who had not hitherto experienced any predisposition, finally underwent the first degree of it, and they also were attacked with the first grade of the disease it occasions. The first degree we shall term *cholerine*, as this epithet has already been employed to designate the same affection at an epoch when it was wished to distinguish the preludes of cholera from cholera itself. *Cholerine* is then the diminutive of cholera, as respects cause, symptoms, and course; and it ought to be considered in the same light as regards its treatment. We will successively give the different points of this question.

It is certain, that since the invasion of the epidemic, that seven-eighths of the population of Paris have presented symptoms belonging to the same affection. Setting aside the effects of the moral commotion which every one must experience on the appearance of the cholera morbus, effects which we shall hereafter notice, it is impossible to avoid recognising, that almost all the inhabitants of the capital, to whatever class they might belong, have for a fortnight past presented the symptoms of an identical disease, modified only in its grades and its secondary appearances. Some lost their appetite, experienced uneasiness after having eaten, have borborygmi during digestion, and especially at night. As yet there is no colic, but there is a sensation of uneasiness, torpor, and intestinal fulness, which ordinarily announce a greater degree of disorder. To these first symptoms of gastric embarrassment are added others, which belong to the functions of innervation. The mind is less excited, less active, at the same time that the muscular strength is weakened, the intellectual faculties lose their energy. In other individuals, the disorder of the functions is much greater. Efforts to vomit, borborygmi, accompanied with colics, spontaneous sweats, greater lassitude, sudden sinking, and finally diarrhœa manifest themselves. This second stage may merely last for a short time, in which case it only constitutes a slight indisposition, which is dissipated of itself, or by the aid of medicine. If it continues, one, two, or many days, it becomes a real disease, which appears to us should attract the more attention, since it is often followed by cholera itself, or may be restricted to its own limits. It is to the complete development of this disease that we give the name of cholerine. In this grade, cholerine principally affects feeble and broken-down constitutions, those who are worn out by excesses or fatigue, by age or chronic disease. It is rare, that cholera does not ensue in individuals who present these conditions. An observation of more than six hundred patients has proved to us that nearly nine-tenths of the cholera patients taken to the hospitals, had experienced all the symptoms of cholerine before they were seized with cholera. Some complained for four or five days previous of diarrhœa, weakness, and spontaneous sweats; others had nausea, and some vomiting; some even presented, though in a slight degree, the first symptoms of intense cholera, as cramps, coldness of the extre-

mities and body, pains in the stomach and intestines; so that it was impossible not to recognise in this assemblage of symptoms, the first product of the general cause, which finally produces cholera morbus, If this be true, it may be conceived of what importance it must be, that every one should prevent cholerine, if it has not occurred, and arrest its progress, if it has taken place.

When there is as yet only uneasiness, without a marked disorder of the functions, it is sufficient to strictly observe hygienic rules, to eat much less at a time, and not to eat until the preceding meal is pefectly digested, to restrict ourselves to some light gruel, if there be not a marked sensation of hunger. This precept is more important than is supposed. Numbers of persons have been seized with colics, diarrhœa, and vomiting, in consequence of having eaten at an improper time, or taken more food than the wants of the system required. When the flatulence and colics last, all solid food should be abstained from, and the utmost care taken to prevent a sudden chill. In the evening before going to bed, a warm infusion of tea or chamomile should be taken, sweetened with a spoonful or two of the syrup of white poppies, and perspiraition induced by warm coverings. If the colics still increase, and are followed by some stools, recourse may be advantageously had to one or two doses of Dover's powder, of about five or six grains each, and weak rice water used as drink. To the preceding should be added, tepid and almost cold baths if practicable. These baths are especially suited for irritable individuals, in whom the influence of fear has become combined with the epidemic influence. In this respect, some distinction should be made between gastric symptoms produced by the reigning constitution alone, and those which might appear to be owing to violent and continual emotions of mind. In the first case, there is but little or no irritation properly speaking. The mouth is clammy but a little warm. The patient experiences a sensation of fulness and weight in the stomach, which may increase to pain, but this latter is neither burning nor is it accompanied with great thirst, burning and dryness of the throat, twitching and spasmodic contraction of the stomach, such as takes place when a continued mental reäction is superadded to the gastric disease. In this second case the symptoms rather assume the character of the cause which has induced them. The difference which is but of little importance where the symptoms are slightly marked, becomes of more consequence where they have acquired some intensity. Cholerine exclusively depending on the epidemic constitution, requires, when it has reached its greatest degree of development, curative means which are almost wholly different from those which are proper for diarrhœa arising from the first cause, we will enter on a few details on this point.

When the epidemic diarrhœa has already existed for a day or two, and has resisted regimen, as slightly astringent drinks, or even when it has commenced with appearances of lasting for some time, as a furred tongue, desire to vomit, loss of appetite for several days, super-orbital cephalalgia, lassitude, and spontaneous sweats, recourse must immediately be had to ipecacuanha, which is to be administered in doses of twenty-five or thirty grains at two intervals of twenty-minutes. This evacuant has the marvellous property of suddenly checking the diarrhœa, and even the vomiting, if this exists. During the eight days that we have employed, and seen it employed by a number of practitioners, it has never failed of producing the happiest results. Recourse should even be had to it when the stomach is the seat of a fixed pain. The great point is to know the nature of the pain. When this is owing to an irritative concentration to the stomach, under the influence of the causes we have above enumerated, we should restrict ourselves to injections and emollient baths, to the detraction of blood from the anus and the epigastric region, to which may be added small injections, with a few drops of laudanum. But, except in such a case, there should be no hesitation in immediately resorting to the emetic. This appears of such importance to us, that of ten cases of cholera which commenced with cholerine, we think that one-half might have been prevented, if recourse had been had to this mode of treatment. This precaution, moreover, ought not to lead us to fear that we may cause an attack of the cholera, as for some days

past a majority of the practitioners of the capital have given a preference to this method, as the first and principal agent in the treatment of cholera.

To conclude. Cholerine appears to us to be produced in its different grades by the more or less marked influence of the epidemic constitution. When left to itself it is susceptible of giving rise to cholera morbus, it is proper therefore to treat it as soon as possible. The means to be employed are, at first, warm drinks slightly opiated, and afterwards ipecacuanha. Some physicians add a mild purgative, as Seidlitz water, or calomel; we think, however, it is better to adhere to the ipecacuanha, and repeat the doses if it be necessary.—*Gazette Medicale de Paris, April* 19*th*, 1832.

20. *Treatment of Cholera by the Polish Physicians.*—Viewed in the light of a new and very peculiar disease, and being actually one of which cases had previously been of very rare occurrence in the northern countries of Europe, the Russian and Polish physicians appear to have been entirely at a loss, during the first eruption of the epidemic amongst them as to the proper course to be pursued in its treatment—one remedy after another appears to have been tried and quickly abandoned. By nearly all a tentative or merely empirical practice was pursued. The one which was most generally adopted, particularly in the Polish camp, was that of the East India surgeons, viz. the external application of stimulants, bleeding from the arm, with opium and calomel internally. The result of this plan of treatment was not, at least among the soldiers, such as to recommend it very highly. From the 23d of April to the 31st of May, 2634 of the military were attacked, of whom 776 or 29.5 per cent. recovered, and 1202 or 45.6 died—leaving 656 under care at the last mentioned date. During the first thirteen days, there was no case of recovery reported. It must be recollected, however, that not only were the great mass of the soldiers, composing the Polish army, precisely of that description of persons in whom the disease proves rapidly fatal—but they were exposed to very great fatigue and privations of every description, while during the first appearance of the epidemic amongst them, the camp was unprovided with surgeons, and consequently many of the patients must have died from the want of medical aid. The largest number of deaths took place during the first twenty-four days, the smallest number subsequently to the 15th of May.

By Dr. Sturm, of the camp near Kamienka, warm water appears to have been the remedy chiefly employed. He gave the patients every fifteen or thirty minutes a glass of water as warm as it could be swallowed—he declares that after fourteen glasses, at the furthest, had been taken, the disease was so far removed, that the patient complained only of a slight diarrhœa. The good effects of the warm water were, we are told, so promptly shown, that in two hours or even sooner, a cure was often effected, particularly when it was drank with sufficient freedom.

In desperate cases the liquid caustic ammonia was given internally, and applied in the form of frictions over the epigastrium, particularly when the cramp was peculiarly severe. This practice does not appear to be very highly recommended, when the doctor informs us that he has seen it in four cases "restore the patients so that other medicines could be employed." The dose of the ammonia internally was fifteen drops.

Dr. Sturm remarks, that the operation of calomel and opium, though he had found it beneficial, and at first depended chiefly upon it, was not to be compared in the rapidity of its effects to the hot water, and accordingly, Dr. S. soon entirely laid aside the former. Blood-letting Dr. S. found to be in the highest degree beneficial in every case in which a flow of blood could be obtained.

Dr. Camillo, surgeon to the Kron-Garde barracks, is said to have been peculiarly successful, losing but few of his patients.

He gave either an infusion of chamomile, ℥vj. with tinct. asafœtid. and sulphuric ether, of each ℈j.; or when there was severe and constant diarrhœa, a decoction of Colombo root, ℥vj. with asafœtida and ether as above. The above

quantities were those generally administered in the twenty-four hours. External frictions with stimulants, and sinapisms, were employed at the same time. A more extensive experience with this plan of treatment does not appear to have confirmed the praises with which it was at first announced.

Of 102 patients treated in barracks, from the 9th of May to the 7th of June, 62 died, or 60.8 per cent. and 20 recovered, or 19.6; remaining 20, of whom 14 were convalescent, increasing thus the proportion of cured to 33.3 per cent. Of the deaths, 36 were under, and 26 over fifty years of age. Of the recoveries, 27 were under, and 7 over that age. Of the cases which terminated fatally, 27 had been bled—15 previously to their entrance in the hospital, and of course at an early stage of the attack; 29 had moxa applied to the abdomen; 50 were treated with opium, either in the form of Dover's powders, or by itself—in 44 cases it was given combined with calomel. In 3 cases emetics were employed.

In all cases treated in garrison, warm baths, repeated twice or thrice a day, were employed. Of the 20 cases which terminated favourably, 8 were bled; 2 children had leeches applied to the abdomen; to 7 were moxas applied; 3 were treated with small doses of calomel and opium; 2 slight cases were cured by the warm bath and warm teas. To 23 individuals the oxyd of bismuth was administered, of these 7 died. In these 23 cases, however, other of the remedies already referred to were employed.

Hope's mixture of nitric acid and laudanum was pretty extensively employed by some of the Polish surgeons, but the slight manner in which it is noticed does not speak much in favour of its efficacy.

It is the general opinion of the Polish physicians, derived from the result of the cases treated in the general hospitals, that large doses of opium, or small doses repeated at short intervals, produced a decidedly injurious effect—paralyzing the stomach, or by their effects upon the brain, hurrying on the stage of collapse.

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21. *Treatment of Cholera at Dünaburg.*—Dr. Ewertz, in his account of the cholera as it appeared epidemically in Dünaburg, states, that from the first appearance of the disease on the 9th of June, 1831, up to the 7th of July of the same year, out of a population of five thousand, seven hundred and forty-five were attacked, of whom only seventy-five died. Two-thirds of the latter were individuals who, from various causes, were not placed under any regular treatment until that period of the disease had gone by, when alone, according to Dr. E. there is certainty of a cure being effected. Nine-tenths of those attacked were of the lowest classes, and were treated at their own dwellings, or when attacked in the streets, were carried to the nearest house, and remedies applied without the least delay.

Our readers will no doubt be anxious to hear the plan of treatment that was generally pursued in those cases in which the patients recovered. The plan appears to us to be one well adapted to a large number of cases of cholera, and to be in general, if sufficiently early resorted to, better calculated to produce a favourable termination of the disease than can be expected from the profuse administration of calomel, opium, brandy and ether, so often resorted to by the East India physicians, and imitated by so many of the physicians on the continent of Europe.

It appears from the paper of Dr. E. that almost the only treatment pursued in Dünaburg was the following.

When an individual was attacked with cholera—when he experienced a giddiness, sunk exhausted, and his whole body, but particularly his extremities, became cold, and of a bluish colour, without loss of time the whole of the body was rubbed diligently with a liniment composed of nine parts of camphorated spirit and one of tincture of capsicum. The frictions were continued until the warmth of the skin was restored, and the patient became roused from the state of collapse into which he had fallen. In the meantime a vein was opened, and sixteen to twenty-four ounces of blood drawn off. When the state of collapse

had gone off, and the pulse beat freely at the wrists, he was directed to drink copiously of a warm infusion of mint or some other aromatic herb, and being warmly covered in bed, hot bricks wet with vinegar were applied to different parts of his body, beneath the bed-clothes, which were properly supported in order that the steam produced should be allowed to pass around him. A free perspiration was in this manner generally produced, the patient commonly fell asleep, and awoke free from disease.

When the attack commenced with a severe vomiting and purging, or with only the one or other, with a severe continued pain at the præcordia, great thirst, and cramps of the extremities, frictions with the spirit of camphor were not found to be so beneficial as the speedy production of perspiration by the means indicated above, the detraction of blood from the arm, and a blister over the epigastrium. In cases where the symptoms were less violent, a blister, sinapism, or even grated horse-raddish to the epigastrium, was sufficient of itself to remove them. The patient at the same time taking from ten to twenty drops of the laud. liq. Sydenh. in a draught of mint or other tea. In very slight cases a tea-spoonful every hour of a powder composed of one part bicarbonas sodæ vel potassæ and two of cremor tart. was found very beneficial. In all cases injections of flaxseed tea with a few drops of laudanum were administered, and it is believed, with good effects.

Dr. Ewertz urges the great importance of losing no time before the foregoing treatment is had recourse to—and denounces all the restrictive measures that have been adopted in the different cities on the supposition that the disease is contagious, as in the highest degree injurious—as calculated to augment rather than to abate the violence of the disease, and by preventing that prompt assistance from being given to those attacked which the rapid progress of the disease so loudly calls for, increases to a very great extent its mortality.

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22. *Summary of the Pathological Appearances observed in twenty dissections of Cholera Patients at Edinburgh.* By John Lizars, Esq.—*Brain.* This organ was examined in twelve subjects, and, in all, the arteries and veins of the integuments and muscles covering the cranium were distended with the dark blood, which, in some, flowed like tar.

In ten, the blood-vessels of the dura mater were turgid with this blood; and in three, there were fibrinous coagula.

In seven, there was serous effusion under the arachnoid membrane.

In four, the pia mater was congested with blood-vessels.

In seven, the cerebrum was highly vascular; and in one, slightly softened.

In seven, the cerebellum was very vascular; and in three, its substance was slightly softened.

Spine examined in ten.—In six, serous effusion between the theca vertebralis and arachnoid membrane; and, in one of these, the fluid was bloody.

In two, serous effusion between arachnoid and pia-mater.

In six, blood-vessels of spinal chord highly injected with the dark blood; and one with evidence of inflammation between dorsal and lumbar regions.

In six, the spinal or rachidian veins turgid with dark blood.

Ganglionic system examined in seventeen.—In ten, the neurilema of pneumogastric nerves was injected with blood-vessels; in one, the nerve was enlarged; in another, it was thickened; and in a third, the neurilema was inflamed with ecchymosed patches.

In six, the neurilema of splanchnic nerves was vascular; in two, the ganglia at their origins were vividly injected; and one ganglion was ecchymosed.

In sixteen, one or both of the semilunar ganglia were vascular; in one, it was inflamed; in three, it was enlarged and infiltrated with blood or serum; and, in two, softened.

In eight, the solar plexus highly vascular throughout; in three, the ganglia and nerves enlarged, and one infiltrated.

In four, the renal plexus was very vascular.

In four, the œsophageal plexuses were vascular.

In one, the recurrent of the pneumogastric nerve was vascular.

In five, the cardiac plexus was enlarged, and very vascular.

THORAX.—*Heart.* In three, the heart was flabby and pale; in two, collapsed; and many of them had the left ventricle so contracted and firm, as to contain only a drachm of blood. In thirteen, the right side was full of the dark gory blood, part of which was generally in the state of a fibrinous coagulum.

In three, the left side was full of the same blood with coagula.

In three, the right auricle full of dark blood and coagula.

In six, the left auricle full of dark blood and coagula.

In four, left ventricle was moderately filled with blood and coagula, and one affected with softening; in two, coagulum extended into aorta.

In five, right ventricle full of blood and coagula. In one, coagulum extended into pulmonary artery. In two, the parietes were softened.

Pericardium.—In one, this sac was distended with gas; in two it was dry, like paper, and vascular; and, in a third, dry, vascular, and diaphanous. In four it was vascular. In all, the coronary vessels more or less injected with dark blood.

Venæ Cavæ.—In all, more or less of the dark blood was found.

Pulmonary Veins.—In six, these veins were turgid with the dark blood.

Lungs.—In four, these organs were congested with the dark blood.

Pulmonary Artery.—In one, a large coagulum, which extended into its two large branches. In three, it was full of the dark blood, and in three others the vasa vasorum were highly injected.

Pleura.—In five, highly injected; and in two, there was effusion of lymph.

Aorta.—In all, it contained more or less dark blood, with fibrinous coagula; in six, the vasa vasorum were highly injected—the dark blood, and occasionally coagula, extended into the carotid, brachial, femoral, tibial, ulnar, and radial arteries.

ABDOMEN.—*Peritoneum.* In nine, this membrane was highly injected; in six, evidently inflamed; and in three, there was albuminous effusion, with some turbid serum. In one, the omentum was very vascular, and in another it was inflamed.

Stomach.—Generally of a white colour, both on its peritoneal and mucous tunics, and containing more or less of the rice-water fluid. In seven, there were distinct vascular patches on the mucous coat, with several ecchymosed spots, varying in size from that of a sixpence to that of a half-crown, and in all there was manifest softening. In one, the mucous tunic was eroded.

Small Intestines.—In twelve, there were evident marks of high inflammation, and vivid and extensive injection; in nine, ecchymosed patches; in four, mucous tunic softened in many points; and in one, incipient ulceration. Contents of a viscid white mucous, or greenish colour, and in two they were bloody.

Large Intestines.—Transverse arch and sigmoid flexure of colon, commonly spasmodically contracted. In five, vascularity, with ecchymosis. Two inflamed, with softening, and one with ulceration. Two with dark venous congestion, similar to intestine in strangulated hernia. Contents generally rice-watery, or gruelly and flocculent, occasionally greenish and viscid. In many the colon, with the exception of the caput cæcum, was empty.

Liver.—Very various in colour; two with Bright's yellow deposit. In some the vena portæ were moderately congested, and in one the biliary ducts full of bile.

Gall-bladder.—Generally two-thirds full of rather inspissated olive-green bile. In the twenty cases ten were full of this fluid; the others varied from a little bile to two-thirds.

Pancreas.—Generally healthy.

Kidneys.—Commonly healthy, but varying like the liver, according to the habits of the individuals. Three were slightly congested, one gorged with the dark blood, and another presented a livid appearance.

Urinary Bladder.—In all contracted, and almost empty. When any fluid was

present, it was about a drachm of muco-purulent. One however was contracted horizontally, and contained five ounces of limpid urine.

23. *Cholera at Paris.*—The cholera is usually represented as having broken out unexpected and suddenly at Paris on the 26th of April last. This is not altogether correct. "Of those physicians," says the editor of the *Gazette Médicale*, "who unprejudicedly observed the development of the reigning constitution, there is not one who did not foresee and almost determine the precise period of the appearance of the cholera. It is especially permitted for us to say so, since, in June last, we pointed out the prevailing constitution as one of the forerunners of the epidemic. This disease was regarded by us as a necessary and inevitable consequence of the elements which we indicated. We will go further; we have had in our possession for at least three months accounts of several unquestionable cases of cholera, occurring under the observation of men of education and of unimpeachable veracity; but the fear of alarming a population already exceedingly uneasy, induced us to preserve silence until the disease has become more completely developed. This development it has attained with great rapidity. Since Monday, March 26th, the period at which the first well-attested cases are said to have occurred, the disease has been going on increasing by tenfold."

Between the 26th of March and the 20th of April, 10,476 persons died in Paris of cholera; and it is said that upwards of 30,000 persons were affected with the disease, not including those who suffered from slight symptoms, evidently depending upon the epidemic constitution; as diarrhœa, borborygmi, cramps of the stomach, pains in the legs, followed by debility, &c.

The disease first appeared in the most crowded and filthy part of Paris, though eventually few or no parts of the city appear to have escaped its ravages, and its earliest and most numerous victims were the wretched inhabitants of narrow, filthy alleys, worn down by misery, debauchery, and privations of every description.

The following summary of the symptoms and treatment of the disease, which we translate from the *Archives Générales* for May last, is said to be the result of the examination of 6,094 patients admitted into the various hospitals of Paris between the 1st and 18th of April. Of the number just mentioned, 3,673 died; 1,594 were discharged cured or perfectly convalescent, and 837 remained under treatment.

"Symptoms. *First stage.*—The individual, if at the time in good health, is seized with diarrhœa; this occurs in some instances very suddenly, the discharges being copious; in other cases the diarrhœa creeps on slowly. There is little griping, and no tenesmus. Soon after the liquid discharges from the bowels take place, a sense of weakness is experienced in the lower extremities, which is sometimes scarcely apparent, while at others it is so great that the patient cannot account for the feeling of exhaustion, so inexplicable by the symptoms under which he labours. Syncope is threatened on every movement of the body. In some cases there is an intense pain of the forehead, the peculiar character of which, the head appearing as it were constricted, and which causes to the patient great inquietude. By degrees anorexia comes on; nevertheless, in many cases, the individual is yet capable of following his customary occupations—frequently, also, the above symptoms, in persons of an energetic or careless disposition, attract little attention, and this leading to a false security, causes serious injury to the patients. This first stage of the disease continues one or two days, and frequently longer, extending sometimes beyond a week, and causing the utmost debility. It is very generally present, and is easily treated.

"*Second stage.*—This is marked by cramps in the limbs and vomiting. The stomach discharges, first the food contained in it, bilious matters are then thrown up, afterwards those of a serous character, which become mixed with whitish flocculi, giving to the discharges the appearances of rice water, or of gruel. The discharges per anum present similar appearances—at first solid,

they quickly become fluid, bilious, serous, and finally are composed entirely of a sero-mucous liquid of a whitish colour. So similar are the stools in appearance to the discharges from the stomach, that it is impossible, at first sight, to distinguish one from the other. They have always a peculiar smell, which is acid, but at the same time sickening, and readily recognised when once perceived. It has some analogy to that of the vapour of iodine, or of chlorine. The sweat of the patient seems to present the same odour, and which in the absence of other symptoms, is sufficient of itself to establish the diagnostic. The discharges from the stomach are more or less constant and abundant. To these succeed cramps, affecting successively the feet, hands, legs, and arms—they invade even the trunk, simulating pleurodynia, partial peritonitis, and more frequently lumbago. The more violent and general they become, the greater is the danger of the patient—the exceptions to this statement are extremely few. The pulse increases in frequency, being from one hundred and twenty to one hundred and thirty in the minute; the extremities become cold, and the arteries lose their normal tension—the blood which flows through them scarcely distending their parietes. The secretions are suppressed, or at least they are suspended; the respiration is laborious, sometimes more frequent and at others slower; but there is constantly a sensation of suffocation, produced by the constriction of the base of the thorax. The patient is restless, agitated, frequently prognosticating his speedy dissolution. The intellectual functions are unimpaired. The features of the face become sharpened, their ordinary expression is entirely destroyed; the eyes are bright, and the tongue pasty.

"*Third stage.*—This is the stage to which the term *blue* has been applied, from the circumstance of the face and extremities assuming a bluish venous and very peculiar tint. To the phenomena of the preceding period, succeed now an extreme exhaustion; the skin becomes of a violet hue, the pulse extremely weak, frequently even entirely ceasing in the radial arteries. The respiration is deep and interrupted; the breath is cold, and has the peculiar odour already alluded to. The voice which had exhibited some degree of alteration during the preceding stage, becomes now extremely feeble, frequently inaudible. The intellectual faculties still remain, nevertheless the patient exhibits a carelessness or an apathy almost complete. The force and frequency of the cramps diminish; the evacuations from the stomach and bowels are less frequently repeated; the skin is bathed with a clammy sweat, and completely cold; the tongue itself is cold; the eyes half opened, present a bluish colour, an ecchymosis as it were of the inferior part of the cornea and conjunctiva; the pupil becomes dilated; the nose contracted; the face assumes a cadaveric appearance, and the limbs become stiff like those of a corpse. The skin is dry, and no longer presents its usual elasticity, so that a fold made in the skin of the neck or chest, remains permanent. During this period the patient dies without convulsions, or any apparent pain, and more frequently without the knowledge of those who surround him, so insensible is the transition from life to death, and so strongly does the living patient resemble the corpse.

"*Fourth stage.*—Reäction sometimes occurs spontaneously, as we are informed by physicians who have seen it in patients left entirely without medical aid. To produce reäction should be the aim of the practitioner, for it indicates a tendency to a favourable termination. The pulse gains an increase of strength, and reäppears in the extremities; the coldness of the surface is diminished; the skin loses its violet hue; the conjunctiva become injected; the voice becomes more sonorous; the tongue and breath acquire their usual warmth; the respiration is more frequent and easy. A hiccough sometimes occurs, as though the diaphragm, in resuming its functions, experienced a difficulty in their proper execution. There is no longer either diarrhœa, vomiting, or cramp. Frequently also, as the circulation becomes more free and vigorous, congestions of the brain take place; the head becomes red, and the patient may then sink rapidly. In other cases the degree of reäction is of a more natural character, and the recovery of the patient is speedily accomplished.

"Such is the general progress of the cholera morbus, as it presented itself in Paris. Many varieties, however, were observed in its phenomena, referable to the particular condition of the patient's system. Thus, in children, females, and very irritable persons, a form of cholera was observed in which the nervous symptoms predominated; the cramps were attended with true convulsions; symptoms were even observed which simulated tetanus; during the paroxysms of which the patient expired. In plethoric subjects, with large and robust bodies, the inflammatory form of the disease manifested itself more frequently; the tongue was red and irritated; the epigastrium was the seat of acute pain; there was violent fever; very copious vomiting; insatiable thirst, and other symptoms demanding evidently an antiphlogistic treatment. In other instances the asphyxial type predominated—the blueness of the skin occurred from nearly the commencement of the attack, and the death of the patient took place often very promptly.

"Treatment.—Notwithstanding all that has been said upon the existence in cholera of a gastro-enteritis or gastro-cephalitis, it is certain that in many cases, even of the most violent character, not the least morbid appearance is discoverable throughout the whole digestive tube. Sometimes we find in the small intestine, a number of either isolated and tolerably prominent follicles or of cellulated patches, having the same appearance as those found at a certain stage of ordinary typhoid affections. In some cases, but more rarely, we find traces of gangrene in the mucous membrane, or black spots which exhale a decidedly gangrenous smell. MM. Renauldin, Martin Solon, Andral and Louis, have met with these morbid appearances in several instances. They are nevertheless exceptions, and cannot serve as a basis, upon which to found a correct idea of the etiology of the disease. What seems more evident, is the alteration of the blood. The proportion of free carbon being double, and that of the colouring quadruple, to what they are in a state of health. The aqueous, albuminous, and fibrinous portions of the blood are almost entirely wanting—in consequence of which it assumes the pitchy consistency so frequently mentioned. If this, which is evidently the essential morbid change, be made the basis of the etiology of the disease, and consequently of its treatment, it may be demanded what relation does there exist between the affection to be removed, and the remedies employed to that end?

"In the first period, when the digestive tube appears to be the principal point of fluxion, it is all important to oppose this congestion. Of course, local bleeding and soothing injections are indicated. Some practitioners have employed other means; they have given ipecacuanha, and produced, in this manner, a sudden impression upon the whole intestinal tube. This shock has been salutary in a great number of cases; but it should not be concealed, that in other instances, it has appeared to have had an injurious effect.

"In the second period, the internal congestion is more extensive; it already impedes the play of many of the functions, and the necessity of directing our efforts to its removal increases rapidly. We may yet bleed if the pulse continues, and the patient is robust. Antispasmodics and hypnotic remedies, capable of arresting the progress of the nervous affection, which is now added to the first symptoms should likewise be administered. Iced drinks, even ice itself, are a very excellent means for arresting the vomiting. Injections, decidedly astringent, will succeed also in arresting the diarrhœa, and preventing that exhaustion which so rapidly follows the discharges from the stomach and bowels. The administration of ipecacuanha even in this stage of the disease, has appeared to be attended with good effects, in bringing back the natural secretions to take the place of those produced by the morbid stimulus. Under the effects of an emetic of this substance, the bile has been known to be copiously discharged; the white matter of the dejections to be diminished, and shortly to disappear; the bladder to become filled with urine, and the cramps to cease.

"With respect to the third period, a new order of phenomena predominate.

The coldness of the extremities, the feebleness of the respiration, the diminished action of the heart, all indicate a complete perversion of the functions of the organs. Even supposing, that during the two first stages of the disease, some portions of the mucous membrane of the digestive tube should become the seat of a slight phlogosis, it does not follow, that this should demand the entire attention of the practitioner, now when life itself is on the point of ceasing, and the actions of all the principal organs arrested. Under such circumstances, the subtraction of a small quantity of blood, is to say the least, useless; the impulsive power of the heart being almost destroyed, and the quantity of the circulating fluids greatly diminished. Our efforts should, therefore, be directed, to the organs which are still capable of feeling the influence of the impressions we desire to make upon them—the stomach, in this case, is one of the points the most accessible to our remedies. The most diffusible stimulants, as ether, ammonia, &c. will now be found to produce salutary effects, and give to the patient some chance of recovery. Even at this period vomits have been administered, and the spinal marrow has also been strongly stimulated. These two means have had the effect of rousing the nervous influence on the point of disappearing—of calling back the powers of life, and of producing reäction. It will readily be perceived that a crowd of analogous measures are all equally calculated to produce these important results. We must say, however, that in this stage the chances of success are but trifling.

"Reäction once obtained, we have to watch its progress and obviate any morbid effects it may occasion when not maintained within due limits. The convalescence from cholera is long, and painful. It requires a constant watchfulness on the part of the practitioner, and the utmost docility on the part of the patient. It is unhappily too true, that a great number of patients recovered from an attack of cholera, but too soon abandoned to themselves, have from the errors in regimen they have committed, been suddenly destroyed. The extreme debility which succeeds to the enormous discharges that take place in this singular disease, predisposes to serious organic affections—the most trifling pneumonia will in an instant become mortal—the slightest irritation of the stomach, will be at once accompanied with all the symptoms which characterize the typhoid diseases, and the patients sink, the more quickly as the plan of treatment proper in the latter affections cannot be put in practice in persons so completely exhausted."

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24. *Injection of Saline Solutions into the Veins.*—The following letter of Dr. Latta, of Leith, to the Secretary of the Central Board of Health, furnishes us with an account of the employment of this remedy for the cure of cholera. The measure has been resorted to in New York and in Philadelphia, but the results are far from realizing the anticipations of Dr. L.

Sir,—My friend, Dr. Lewins, has communicated to me your wish for a detailed account of my method of treating cholera by saline injection into the veins, with which I now most willingly comply. My scope for observation, since I commenced this treatment, has been too limited to allow me to be very copious on the subject, but I think I can adduce sufficient proof to the unprejudiced, not only of its safety, but of its unquestionable utility. I have never yet seen one bad symptom attributable to it, and I have no doubt that it will be found, when judiciously applied, to be one of the most powerful, and one of the safest remedies yet used in the second stage of cholera, or that hopeless state of collapse to which the system is reduced.

Before entering into particulars, I beg leave to premise, that the plan which I have put in practice was suggested to me on reading in The Lancet, the review of Dr. O'Shaughnessy's report on the chemical pathology of malignant cholera, by which it appears that in that disease there is a very great deficiency both of the water and saline matter of the blood. On which deficiency, the thick, black, cold state of the vital fluid depends, which evidently produces

most of the distressing symptoms of that very fearful complaint, and is, doubtless, often the cause of death. In this opinion I am abundantly borne out by the phenomena produced on repletion by venous injection.

So soon as I learnt the result of Dr. O'Shaughnessy's analysis, I attempted to restore the blood to its natural state, by injecting copiously into the larger intestines, warm water, holding in solution the requisite salts, and also administered quantities from time to time by the mouth, trusting that the power of absorption might not be altogether lost; but by these means I produced, in no case, any permanent benefit; but, on the contrary, I thought the tormina, vomiting, and purging, were much aggravated thereby, to the further reduction of the little remaining strength of the patient; finding thus, that such, in common with all the ordinary means in use, was either useless or hurtful, I at length resolved to throw the fluid immediately into the circulation. In this, having no precedent to direct me, I proceeded with much caution. The first subject of experiment was an aged female, on whom all the usual remedies had been fully tried, without producing one good symptom; the disease, uninterrupted, holding steadily on its course. She had apparently reached the last moments of her earthly existence, and now nothing could injure her—indeed, so entirely was she reduced, that I feared I should be unable to get my apparatus ready ere she expired. Having inserted a tube into the basilic vein, cautiously—anxiously I watched the effects; ounce after ounce was injected, but no visible change was produced. Still persevering, I thought she began to breathe less laboriously; soon the sharpened features, and sunken eye, and fallen jaw, pale and cold, bearing the manifest impress of death's signet, began to glow with returning animation; the pulse, which had long ceased, returned to the wrist; at first small and quick, by degrees it became more and more distinct, fuller, slower, and firmer, and in the short space of half an hour, when six pints had been injected, she expressed in a firm voice that she was free from all uneasiness, actually became jocular, and fancied all she needed was a little sleep; her extremities were warm, and every feature bore the aspect of comfort and health. This being my first case, I fancied my patient secure, and from my great need of a little repose, left her in charge of the hospital surgeon; but I had not been long gone, ere the vomiting and purging recurring, soon reduced her to her former state of debility. I was not apprised of the event, and she sunk in five and a half hours after I left her. As she had previously been of a sound constitution, I have no doubt the case would have issued in complete reäction, had the remedy, which had already produced such effect, been repeated.

Not having by me the number of THE LANCET containing Dr. O'Shaughnessy's analyses, I adopted that of Dr. Marcet, only allowing a smaller proportion of saline ingredients. This I now find to be considerably less than natural, according to the more recent analyses. I dissolved from two to three drachms of muriate of soda, and two scruples of the subcarbonate of soda in six pints of water, and injected it at temperature 112° Fah. If the temperature is so low as a hundred, it produces an extreme sense of cold, with rigors; and if it reaches 115°, it suddenly excites the heart, the countenance becomes flushed, and the patient complains of great weakness. At first there is but little felt by the patient, and symptoms continue unaltered, until the blood, mingled with the injected liquid, becomes warm and fluid; the improvement in the pulse and countenance is almost simultaneous; the cadaverous expression gradually gives place to appearances of returning animation, the horrid oppression at the præcordia goes off, the sunken turned up eye, half-covered by the palpebræ, becomes gradually fuller, till it sparkles with the brilliancy of health, the livid hue disappears, the warmth of the body returns, and it regains its natural colour—words are no more uttered in whispers, the voice first acquires its true cholera tone, and ultimately its wonted energy, and the poor patient, who but a few minutes before was oppressed with sickness, vomiting, and burning thirst, is suddenly relieved from every distressing symptom; blood now drawn exhibits on exposure to air its natural florid hue.

Such symptoms, so gratifying both to the sick and the physician, must never allow the latter to relax in his care—the utmost vigilance is still necessary. At first the change is so great, that he may fancy all is accomplished, and leave his post for a while. The diarrhœa recurring, he may find his patient, after the lapse of two or three hours, as low as ever. As soon as reäction by the first injection is produced, mild warm stimulants, such as weak gin toddy, mixed with some astringent, should be freely and assiduously administered. An attempt should be made to fill the colon with some astringent fluid. That such is requisite, is evident from the watery diarrhœa returning with violence, and if not restrained, death will ultimately make sure of his victim, therefore, so soon as the pulse fails, and the features again shrink, the venous injection must be repeated, taking care that the fluid in use retains its proper temperature. The injection should be carried on very slowly, unless the patient is much exhausted, when it may be used more rapidly at first, until a little excitement is produced, after which it should not exceed two or three ounces per minute, and now is the time for the exhibition of astringents by the mouth, which will be retained; for in general the sickness entirely leaves during the operation.

Such remedies must be persisted in; and repeated as symptoms demand, or until reäction is permanently established. I have witnessed no violent symptoms accompanying the rapid injection of the fluid; but I have thought that the hasty repletion of the system was followed by great increase of the evacuations, and, consequently, a more sudden depression of the powers of life. The quantity to be injected depends on the effect produced, and the repetition on the demands of the system, which generally vary according to the violence of the diarrhœa; the greater the degree of collapse, the greater will be the quantity needed, though not uniformly, for a very slight loss produces much depression in some systems; hence there is often great collapse, without much vomiting, purging, or cutaneous discharge.

Although in every case, even the most desperate, the cholera symptoms were removed, some of my cases failed, which I attributed to one or other of the following causes—either the quantity injected was too small, or its effects were rendered abortive by extensive organic disease, or its application was too late.

I have already given an instance where deficiency in quantity was the cause of failure, which I will now contrast with one in which it was used freely. A female, aged fifty, very destitute, but previously in good health, was on the 13th instant, at four A. M., seized with cholera in its most violent form, and by half-past nine was reduced to a most hopeless state. The pulse was quite gone, even in the axilla, and strength so much exhausted, that I had resolved not to try the effects of the injection, conceiving the poor woman's case to be hopeless, and that the failure of the experiment might afford the prejudiced and the illiberal an opportunity to stigmatize the practice; however, I at length thought I would give her a chance, and in the presence of Drs. Lewins and Craigie, and Messrs. Sibson and Paterson, I injected one hundred and twenty ounces, when, like the effects of magic, instead of the pallid aspect of one whom death had sealed as his own, the vital tide was restored, and life and vivacity returned; but diarrhœa recurred, and in three hours she again sunk. One hundred and twenty ounces more were injected with the same good effect. In this case three hundred and thirty ounces were so used in twelve hours, when reäction was completely reëstablished; and in forty-eight hours she smoked her pipe free from distemper. She was then, for better accommodation, carried to the hospital, where probably, from contagion, slight typhoid symptoms were produced. She is now, however, convalescent.

The second cause of want of success is the presence of organic disease; this, probably, renders the possessor very liable to attacks of cholera; and the latent evil, which previously gave but little uneasiness, suffers aggravation in all its symptoms, more especially after reäction has been produced, and has evidently, in many cases, been the cause of death. A delicate young female, of strumous habits, who had been for some years subject to pectoral complaints, was rescued

from a state of collapse by the injection of sixty ounces of the saline fluid, administered in separate portions, within the space of twelve hours. After lingering for ten days she died; the heart was found in a state of atrophy, covered with strong evidence of the existence of ancient disease, and floating in eight ounces of pus. In another case every internal organ was diseased; some of them so much so, that it was astonishing the individual lived so long.

The third case of the occasional want of success, is the late application of the remedy. Hitherto I have had opportunity of injecting only in extreme cases, after every other means had entirely failed, cases which apparently soon would have proved fatal. Here the obstacles to be overcome have been of no ordinary kind, notwithstanding the result of the practice is of the most encouraging nature, and the number of cases now convalescent or doing well highly gratifying. In every fatal case we have had an opportunity of examining, independent of organic disease, I have found a large quantity of fibrine in the cavities of the heart, especially on the right side, where it had extended from the auricle through the ventricle in the pulmonary artery. Such deposition must have formed a certain obstacle to recovery, and is, no doubt, from the interruption it gives to the pulmonary circulation, the cause of the heavings of the chest, and the inordinate action perceptible in the centre of circulation many hours before death. Now surely it is reasonable to suppose, that if this, the most simple of all remedies, were applied early, before the blood drained of its water has collected in the larger vessels, in fact before such fibrinous depositions have taken place in the cavities of the heart, is it not reasonable to suppose that such would be entirely prevented?

But not only is early injection adviseable on this account, not only is stagnation of the blood prevented by it, and the laborious breathing, and the præcordial oppression, the intense sickness, the burning thirst, the extreme depression of the vital powers, and the chances of aggravating chronic disease, or of producing new organic lesion, in a great measure avoided: but it is rational to suppose that the consecutive fever will be rendered much milder, and that this is the case, is supported by my own experience, even though the remedy has not been applied earlier, indeed the fact is very evident. In an ordinary attack of cholera, much fluid is lost; and if the individual is so fortunate as to get out of the stage of collapse, if consecutive fever of typhoid type comes on, the system, left to its own resources to replace the lost serum, must be but ill fitted for the task, for the debility is extreme, absorption goes on slowly, the fever will be much aggravated by the irritation of internal congestion; local inflammation will thereby be produced, and the chance of recovery will be but small. Much of this evil is to be mitigated or entirely avoided by injection into the veins, of which circumstance I can adduce living instances; and where the patient, who had been injected, has sunk under organic disease, the usual marks of congestion are not perceptible.

The apparatus I have used, is Reid's patent syringe, having a small silver tube attached to the extremity of the flexible injecting tube. The syringe must be quite perfect, so as to avoid the risk of injecting air; the saline fluid should never be injected oftener than *once* into the same orifice, and the vein should be treated with much delicacy to avoid phlebitis. The wound should be poulticed and carefully watched, if it does not heal by the first intention.

I am, sir, your most obedient servant,

THOMAS LATTA, M. D.

Leith, May 23d, 1832.

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25. Magendie's *Treatment of Cholera.*—M. Magendie's success in the treatment of cholera has been vaunted in many of the journals. His plan of treatment consists in the administration during the cold stage of the following:—

1st. For common drink—℞. Infus. chamomil. ℔iv.; acet. ammon. ʒij.; sacch. alb. ℔j. M.

2d. Half a glass every hour of the following punch—℞. Infus. flor. Tiliæ Europeæ, ℔iv.; limon. iv.; alcohol, ℔j.; sacch. alb. ℔j. M.

3d. From time to time he gives half a glass of the following—℞. Vinum calefac. ℔ij.; tinct. cannel. ℥ij.; sacch. alb. ℥xij. M.

By these stimulants, reäction was sometimes induced, and it was at once concluded that the patient was cured. But violent reäction is not less dangerous than collapse, and M. Magendie's patients relieved from the latter condition by internal stimulants, soon exhibited evidences of congestion of the brain or digestive organs, which resisted, for the most part, general and local bleeding, cold to the head, and the most active revulsives to the feet. The patient became delirious, coma supervened, and death closed the scene.

It is shown by authentic documents in our possession, that the result of M. Magendie's treatment was not less unfortunate than that of his colleagues; he lost more than one-half of his patients.

A careful examination of the results of the various modes of treatment adopted in India, Russia, Poland, Germany, Great Britain and France, has satisfied us that the internal administration of powerful stimulants in large doses, in the collapsed stage of cholera, has been eminently injurious, and such appears to have been ultimately the conviction of nearly all the practitioners who resorted to them. Panic struck, with the utter state of prostration of patients in the collapse of cholera, physicians appear every where to have at first been led to administer the most powerful stimulants in large and repeated doses, to rouse the action of the heart. Recovered from their first surprise, and admonished by their ill success, and by the violent and uncontrollable reäction sometimes induced, these remedies were subsequently abandoned, or only applied externally, and with incomparably better results.

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26. M. Petit's *Treatment of Cholera.*—The principal indication which M. Petit, one of the physicians of the Hôtel-Dieu de Paris, proposes to himself to fulfil, in the treatment of cholera, is to keep up a constant impression upon the spinal marrow, and to change the phenomena of innervation. To effect this, he places over the whole length of the spine a strip of flannel, wet with a liniment composed of an ounce of the essence of turpentine and a drachm of aqua ammonia, and passes slowly over it a very hot flat-iron. An instantaneous evaporation of a great part of the liniment results, which acts powerfully on the skin over the spine, and induces very speedily vesication. The heat returns to the skin, the cramps and vomitings disappear, the circulation is reëstablished, and the patient feels much better. The effects of this remedy are assisted by hot bricks to the limbs; by frictions to the body with a decoction of mustard, to which some aq. ammonia is added, and the patient is also made to drink copiously of balm and mint tea. A table-spoonful of the following potion is likewise given every hour:—℞. Aq. distil. Tilliæ Europeæ; aq. distil. melissæ, āā. ℥ij.; tinct. opii, gtt. xx.; syrup. ether. ℥j. M. Finally, the patient is rubbed all over with a liniment composed of camphorated oil of chamomile, ℥ij.; laudanum, ℥ij.; liquid ammonia, ℥j.

M. Petit is said to have been more successful than most of his colleagues in the treatment of cholera. In a communication to the Academy of Medicine, he states that under the above treatment two-thirds of his patients have recovered.

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27. *Non-Purgative Salts in Cholera.*—The following statement, relative to the treatment of cholera in the prison at Cold Bath Fields, are interesting, and are said by the editor of the London Medical Gazette, to be entitled to entire confidence as to its accuracy.

"The first twelve cases occurred in the vagrant's ward, and the patients were attacked soon after some prisoners had been admitted from St. Giles's, and other infected districts. The first case that was reported as cholera, occurred on the

5th of April. This man was suddenly attacked, and died after a very short illness with all the symptoms of the prevailing epidemic.

"When the first cases occurred, there were in all about twelve hundred persons in the prison; but, up to the beginning of this month, they were not afflicted with bowel complaints, nor, in fact, with any other epidemic disease, being as healthy as they generally are at that season of the year.

"The first four cases were treated in the common way, with brandy and opium, an ammoniated mixture, ginger, sinapisms to the region of the stomach, the hot air-bath, &c. &c.; and all of them died after a short illness.

"Since the 4th of April, up to this date, (April 17,) forty cases in all have been under treatment. Of this number, nineteen were admitted into the Observation ward with the premonitory symptoms of cholera. All of these had bowel complaints and suspicious ejections; some of them complained of severe pain in the abdomen, sickness of the stomach, and in several cases these symptoms were attended with cramps, chiefly in the lower extremities. The whole of them were immediately treated by Mr. Wakefield with non-purgative saline remedies, recommended by Dr. Stevens, and in general they were convalescent in one, two, or three days, from the commencement of this practice. From this we may infer, that where the disease is attended to early, and *properly treated*, the state of collapse may be prevented in nineteen cases out of twenty.

"We must state, however, that as the numbers increased, it became necessary to dismiss those that appeared to be least ill, on purpose to make room for others. Of those that were dismissed as convalescent, two were reädmitted soon after in a state of collapse, and though every attempt was made to save them, yet they both died after a very short illness, with the symptoms of cholera in its most virulent form. With the exception, however, of the two that died, none of the cases, (seventeen in number,) were reported to the Central Board, partly, we believe, from a wish to avoid spreading alarm with respect to the prison, and partly because the disease was checked in the beginning; consequently, the patients had not *all* the symptoms of cholera, such as occur in the worst cases, or in the last stage.

"In addition to the above seventeen which were not reported, there were twenty-one cases where the symptoms of cholera were very distinctly marked. Of this number, four of the early cases were treated in the common way, with diffusible stimuli, &c. &c., and all of them died after a short illness. These, with the two cases of relapse from the Observation ward, make in all six deaths. Mr. Wakefield, however, having lost all faith in the common treatment, changed the practice:—at the request of Dr. Stevens, the other fifteen cases were put under the saline treatment, and all of them recovered.

"When the patients were first admitted, the following powder was immediately given, either in half a tumbler of tepid water, or occasionally in a little thin, clear, beef-tea:—

"Supercarbonate of Soda, ʒss.; Muriate of Soda, ℈j.; Chlorate of Potass, grs. vii.

"The above was given every hour, and continued until the patients were recovering from the state of collapse; after which it was diminished in frequency, in proportion as the reäction increased.

"In all these cases, the outline of the practice was nearly the same; but in several instances the treatment was varied according to circumstances. When the stomach, for example, was extremely irritable, it was found that the carbonate of soda, given by itself, or the tartrate of soda, in a state of effervescence, were the most effective remedies that could be used on purpose to allay the irritation, so as to enable the stomach to retain the stronger salts.

"During the progress of the disease, an enema, with a large table-spoonful of muriate of soda, dissolved in warm water, was administered with or without sugar, starch, &c. every three or four hours, at as high a temperature as the patients could well bear it. Sinapisms were also applied as early as possible to the region of the stomach, betwixt the shoulders, &c.; and in the cold stage,

frictions were also frequently used with warm towels. Of the seventeen cases that were treated in this way, two died, (namely, the two patients who were reädmitted in a state of complete collapse,) making in seventeen cases, two deaths, and fifteen recoveries. But including the whole of those that were under the saline treatment, the total amount is, in thirty-six cases, two deaths, and thirty-four recoveries.

"The cases in question were under the care of Mr. Wakefield, the medical attendant of the establishment, and during his absence they were attended to by Mr. J. Wm. Crooke, who kept notes of the cases, and saw that the medicines were properly administered. We may add, also, that Mr. Wakefield, with a degree of fairness which does him great credit, invited Dr. Stevens to attend along with him to witness the effect of the saline treatment, which has here, we may say, for the first time, been fairly tried in this disease.

"We can also state, that the cholera made its appearance about the same period amongst a small colony of Italians, who live in a narrow lane within a few hundred yards of the prison. Of these, eleven were attacked. The three first cases were treated by bleeding, brandy, and opium, all used at the same time, and they all died. The other eight cases were attended by Mr. Whitmore, a surgeon in the neighbourhood, who, having witnessed the effects of the saline treatment in the prison, adopted it. All his patients speedily and completely recovered, except one, who, on the 13th, was so ill that he was not expected to live many hours; even he, however, is now in a state of convalescence. *Thus there have been in all fifty-three cases, seven of which were treated in the common way, with diffusible stimuli; and out of this number seven died; while, of the forty-six that were under the saline treatment, there were two deaths and forty-four recoveries."—Lond. Med. Gaz.*

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28. *Treatment of Cholera.*—We extract the following remarks on the treatment of cholera, from a pamphlet by Dr. Brown of Musselburgh. "In the second stage, viz. cholera spasmodica, *which I should mark with vomiting and purging having commenced, to the extent of having produced spasms*, and the pulse much affected, and frequently not much better than a flutter, with considerable coldness, and the eyes somewhat sunk; the greatest exertion is necessary to save our patient from the state of complete collapse and asphyxia. It is in this state that I allude to our having placed in a state of safety nine out of ten. The plan here followed is, to lay aside the thought of every medicine *but opium*, and every cordial *but brandy*, if at hand. I instantly endeavour to get over an opium pill proportioned to the age of the patient; and if even a child, I prefer this form, and almost always, with a little exertion, succeed. If it should so happen that I cannot get over the opiate in a solid form, I then directly drop the dose of laudanum in a little powdered sugar, and succeed in that manner quite readily; having succeeded in getting over the anodyne, I do not allow a single drop of liquid, not even brandy and water, to be given for nearly an hour, but continue merely drawing a tea-spoon, or feather, dipped in pure cold water, occasionally through the lips; and when the opiate has been retained that time, there is a general cessation of all the alarming symptoms, and not only small quantities of such brandy and water may be allowed, but even panada, with a little brandy, may be commenced giving by the end of two hours, at which time our patient is placed in a state of comparative safety; but if the symptoms should be obstinate—in case the vomiting and purging still continue, and seriously threaten a tendency to complete collapse—I lose no time in giving every nourishing and cordial enema, composed of strong beef brue, two glasses of good sherry, a proper quantity of flour, and as much laudanum as will be considered equal to a dose given by the mouth, which is in my opinion exactly double; and this remedy will be followed with the most immediate benefit if only kept an hour or two, which I have in general been able to effect, by taking care that it was *only tepid*, and by pressure upon the anus continued for an hour; and the case, if cautiously managed, will end in a rapid recovery, and if

any symptom of disordered bowels afterwards occur, they can be very easily managed.

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29. *Chemical Analysis of the Blood of Cholera Patients.*—Dr. Thomas Thomson, Regius Professor of Chemistry in the University of Glasgow, availed himself of the opportunity presented by the occurrence of cholera in Glasgow, to examine the composition of blood drawn from cholera patients in well-marked cases, and has published the results in the *Philosophical Magazine*, for May last. The specimens of blood analyzed by Dr. T. were obtained from patients in the cholera hospital in Albion street. The cases were well-marked, and generally the blood taken after the disease had made considerable progress, and in several of the specimens the blood was drawn when a pulse could scarcely be felt at the wrist. The blood, when it was received by Dr. T. was in the usual tin-plate cups employed in hospitals, into which it had been allowed to flow. Its colour was always a very dark red, almost black; much darker than venous blood usually is; and it did not acquire a scarlet colour, as blood from a person in health does when exposed to the air. It coagulated as usual, and separated into serum and crassamentum; but the serum was much less in quantity than it usually is. It was always, (except in one instance,) more or less tinged with colouring matter; often so deeply as to rival the colour of the crassamentum itself. The following table exhibits the specific gravity of various specimens of serum from different cholera patients.

	Sp. Gravity	
1.	1.0446.	This was pure yellow serum.
2.	1.0443.	Very slightly tinged red.
3.	1.052.	Very red.
4.	1.055.	Very red.
5.	1.057.	A very deep red.

A specimen taken out of the cavities of the heart after death was imperfectly coagulated. Being poured on a cotton cloth, a very dark red liquid dropped through, the specific gravity of which was 1.0938.

I got a specimen of blood from the cerebral vessels of another cholera patient after death: it was not coagulated; nor did it coagulate, though I allowed it to stand in an open vessel for thirty-six hours. After standing at rest for thirty-six hours, I observed that the uppermost portion was very fluid, and apparently watery; and though it had a deep red colour, it did not tinge a glass rod dipped into it. The portion at the bottom was thick and viscid, and stained strongly, sticking to every thing like tar. The specific gravity of the uppermost portion was 1.0533, while that of the undermost was 1.0699.

I got another specimen of blood from the heart; it was very imperfectly coagulated, and very viscid: its specific gravity was 1.1020. This blood did not by standing separate into two parts. The portion at the surface, after standing twenty-four hours, was as heavy as that at the bottom.

The great difference between the specific gravity of the serum of cholera blood and that of the serum of healthy blood is very remarkable. The mean specific gravity of the serum of healthy blood is 1.0287; while that of the five specimens of the serum of cholera blood stated above is 1.0506.

Cholera serum coagulates at the usual temperature, namely, when heated to 159°.

The ratio between the serum and crassamentum in cholera blood was found to be as follows:—

Serum - - - - - - - - - -	33.2
Crassamentum - - - - - - -	66.8
	100.0

If in healthy blood we suppose the serum to amount to 33.2, the crassamen-

tum will only be 27.16; thus it appears, that in cholera blood, the crassamentum is more than twice as much as in healthy blood.

The following are the constituents of two specimens of cholera blood subjected to analysis.

1. Blood, No. 1.

Albumen	4.856
Fibrin	0.378
Colouring matter, with albumen	27.450
Salts	1.195
Water	66.121
	100.000

2. Blood, No. 4.

Albumen	6.305
Fibrin	1.340
Colouring matter, with albumen	23.160
Salts	1.255
Water	67.940
	100.000

To enable us to compare this blood with that of persons in health, the following Table, exhibiting the constituents of healthy blood, will be of use.

Albumen	8.47
Fibrin	4.45
Colouring matter, with albumen	7.39
Salts	1.30
Water	78.39
	100.00

The following Table will show the proportions of the constituents on the supposition that the water in each amounts to 100.

	Healthy Blood.	Cholera Blood.	
		No. 1.	No. 4.
Water	100	100	100
Albumen	10.79	7.34	9.28
Fibrin	5.67	0.57	1.97
Colouring matter, with albumen	9.42	41.51	34.08
Salts	1.65	1.81	1.85
	127.53	151.23	147.18

We see that the albumen is less abundant in the cholera blood than in healthy blood. But probably this excess in healthy blood is more apparent than real. It is not in our power to free the crassamentum completely from the serum. In my experiments, the crassamentum was simply left on a cloth till all the serum that would drop out had separated. It is clear, that by this process, more serum would be left than if the crassamentum had been dried on blotting paper. Now, this portion of serum would contain albumen, which would be added to the colouring matter, and would have the effect of apparently increasing its quantity. How far the quantity of albumen wanting to make up the quantity in healthy blood, amounting in No. 1. to 3.45, and in No. 4. to 1.51, may be accounted for by this circumstance, it would be hazardous to conjecture; but certainly no inconsiderable portion of it must be owing to this circumstance.

The deficiency of fibrin in cholera blood is very remarkable, and struck me very forcibly. The fibrin in the cholera blood No. 1. is only about 1-10th of that in healthy blood: the quantity in the blood No. 4. is nearly four times as great; but it is still only about the third of the quantity which exists in healthy blood.

In almost all cases a polypus is found in the heart of those who have died of cholera: this polypus has a buff colour, and consists of pure fibrous fibrin. Dried artificially, it assumes a reddish colour, as happens to fibrin in general. One of these polypi, which I freed from colouring matter by washing, weighed after being dried in a heat not exceeding 200°, 22.12 grains. It would appear from this, that fibrin is disposed to leave the blood of cholera patients, either during life, or at least soon after death: 22.12 grains constitute but an inconsiderable portion of the fibrin of the whole blood. If we admit a full-grown individual of the mean size to contain thirty-pounds of blood, the whole fibrin in that fluid must amount to 1.7 pound, or 11.900 grains: but it is possible that similar polypi may be contained in the large blood-vessels. This, however, was not verified by dissection; for the blood contained in the sinuses of the brain in one case, was found quite liquid, and did not coagulate, though it was almost as black as ink.

The great excess of colouring matter in cholera blood is no less remarkable than the deficiency of fibrin. If we make allowance for the albumen and salts still contained in the colouring matter, and take a mean of the quantity of colouring matter in Nos. 1. and 4, we shall find it to be little short of four times the quantity of colouring matter in healthy blood. Whether this increased quantity of colouring matter may be partially accounted for by any alteration in the fibrin, such as to make it soluble in water, it is impossible to say. But be this as it may, it is obvious that there is a great increase of colouring matter: for the fibrin and colouring matter of healthy blood added together, do not amount to so much as one-half of the colouring matter in cholera blood.

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30. *Extracts from the Reports of the Cholera at Danzig.* By John Hamett, M. D.—"Passing over subordinate features of the epidemic, I shall limit my descriptions here to the three principal forms of it, viz.

1. "The rapid and severe cases of fatal cholera.
2. "The protracted cases of fatal cholera; and
3. "Those less severe, which proved favourable.

1. "In most rapid and severe cases of fatal cholera, the patient was suddenly seized with sickness or pain at stomach, occasional pain, or feeling of weight and uneasiness in the hypochondria, the right hypochondrium especially, giddiness, prostration, great thirst and craving for cold drinks, a cold sweat that quickly became colliquative and clammy; at times coldness alone, at others coldness and dampishness of the body—but never with shivering; the pulse was frequent but not hard, and soon became exceedingly reduced; the hands and features somewhat shrunk; the tongue was foul, unnaturally moist, and occasionally tremulous; the voice subdued; the eyes heavy and suffused, and the sight dim. These primary symptoms were in general either accompanied, or immediately followed, by retching and vomiting, and a peculiar watery diarrhœa, that often, however, proved irregular in the order of attack, occasionally even with respect to each other, and oftentimes severe, in hot, close, and electrical weather especially; griping pains in the abdomen; painful contractions of the muscles at the umbilicus; suppression of the secretion of urine, and occasional pain in the region of the bladder. Cramps in general followed the retching and vomiting, and in most instances invaded the calves of the legs at first; in their attacks of other parts of the extremities they proved irregular, seizing first the forearms, calves and forearms, hands and fingers, toes and feet, or hands, feet, and calves, in different instances, indiscriminately; occasionally they mounted up the thighs, but seldom attacked the trunk. Men rarely escape them, women frequently, and children generally.

"The vomited matter in general consisted of undigested food at first, sometimes partially tinged with yellowish-green, of fluid ingesta, also occasionally imbued with greenish-coloured matter, and partly of slime and mucus. Often, however, it consisted of undigested food, or of fluid ingesta alone, without being in any wise so imbued. In the retching and vomiting which followed, the fluids taken continued to be rejected with a little greenish-coloured matter, with or without more slime or mucus. The dejections were always watery; sometimes as if coloured with feculent matter, in general they were either colourless, somewhat like whey, or had the appearance of rice-water, barley-water, occasionally somewhat dirty, or an evanaceous sediment, after being shaken in water.

"After this first advance of the disease, the following symptoms rapidly supervened; viz. increasing oppression at the heart, and short hurried and laborious breathing, ending in complete oppression and weight at the *præcordia;* tossing of the head about; anxious restlessness depicted, often with terror, in the countenance, which in general was of a dark brown, wan, or leaden hue, according to the complexion; insatiable thirst, with incessant craving for cold drinks, and the voice raucous and depressed. The retching and vomiting, and diarrhœa, with occasional *tormina* and cramps, at first only intermitting at short intervals, subsided either abruptly, or gradually as vital exhaustion advanced; the pulse at the wrist, if not extinct—which it was in most rapid and severe instances—was accelerated to the utmost in frequency, and barely felt; the surface of the body quite cold, damp, and clammy, and the feet and insteps marked with bluish streaks and patches; the tongue cool or cold, and in some instances livid at the tip and edges; breath cool or cold; lips blue; nose sometimes bluish; voice below the breath, or gone; cheeks and eyes now quite sunk; pupils at times partly or completely dilated: eyelids half-closed, and encircled with livid rings; the parts of the conjunctivæ exposed being much the same in appearance as after death. Amid this complicated suffering, the patient was not insensible until just before dissolution, which ensued after some faint convulsive sobs, generally within from eighteen to seventy-two, and occasionally within from eight to eighteen hours after the first attack.

2. "In the protracted cases of fatal cholera, which have been few in number compared to the rapid cases, the following febrile symptoms have been observed, more or less, in different patients after the indefinite period of the first stage; namely, marked congestion, with pain in the head, deafness, humming noise in the ears, heavy stupor, continual drowsiness, partial ravings; a dark-flushed, brownish-yellow, squalid or cadaverous countenance; a dark-brownish clammy, or furred tongue; dark sordes about the teeth and lips; eyes heavy and suffused, or dry and parched, often with eventual dilatation of one or both pupils; a hot or cold clammy skin; pulse frequent, with febrile action, or very small; with pain or soreness of the abdomen, increased on pressure—and occasional tenesmus. With these symptoms, the excretions, as may be readily conceived, were scanty and vitiated. The stools dark, dark-green—very fœtid; and the urine in general dark-coloured. Delirium generally took place in these before death, and they died within from three or four to five or seven days, or later, after the first attack; more generally on the fifth.

"These modifications of particular symptoms, bordering on each other, and referring to individual parts, depend, I need scarcely add, not only on differences in constitution, but, in a certain degree, on the mode of treatment at the commencement, and even on the state of the locality in which the patients happened to be placed.

3. "In the cases less severe,—and as I have observed,—of less unhealthy persons in whom the natural powers* of the constitution were calculated to withstand the effects of the shock on the system, giddiness, retching and vomiting, watery diarrhœa, occasional griping pains in the abdomen, cramps, occa-

* "This is certainly true; and yet a woman, named Eliza Brandt, thirty-six years of age, affected with tubercles and vomicæ, had, in July last, this less severe form of cholera, which soon gave way to all the hectic symptoms of her complaint."

sional painful contraction of the muscles at the umbilicus, thirst, and suppression of urine, took place, and proved occasionally severe; but the congestion in the head, and oppression in the chest, were certainly less marked; the pulse, although barely felt, was rarely entirely suppressed; coldness of the body, the cold clammy sweat, and other bad symptoms, were not marked in any great degree. The leading symptoms gradually, or abruptly, disappeared; and more or less of febrile reäction ensued, generally within from eighteen to twenty-four or thirty-six hours, or more, after the commencement of the disease; about which time hiccups, always a favourable sign, were occasionally noticed, and not before. The exact period of the return of the urine was not certain, being sometimes before, at others after, the first appearance of reäction: it was dark or high-coloured, voided in small quantities, with occasional difficulty, and frequently attended with some pain in the region of the bladder. The return of urine, though an important symptom, was not always decisive or a favourable result; on the contrary, hiccup, which however was not always observed, almost invariably indicated recovery. The dejections immediately after the commencement of reäction were fluid, scanty, and dark-coloured, as if imbued with blackish, feculent matter; but they very soon became successively brownish, and naturally bilious and feculent. Indeed, in the majority of cases of this description, the secretions and excretions soon got into play, and restoration was more or less rapid.

"Partial stupor, with little or no delirium, more commonly occurred in children, and spare aged persons free from previous organic or general complaint, and gave grounds for a favourable prognosis: they seemed tranquil, and as if naturally asleep. They were in general affected with œdema in the feet, and more or less in the legs after convalescence had commenced. Œdema also occurred in others after the disease, but not generally. In pregnancy abortion invariably took place, and was always a critical symptom, death or a favourable change soon following.

"From the description above given of the rapid and severe cases of fatal cholera in Danzig, its similarity to the Indian cholera appears manifest; and from the descriptions of fevers supervening after the first stage, as given in the second and third forms, its deviation from the Indian epidemic, in which those fevers do not generally supervene, also appears evident. The greater severity in general, which has been found of the vomiting, diarrhœa, griping pains in the bowels, and painful contraction of the muscles at the umbilicus, in the epidemic in India, compared to that in Danzig, is easily explained by the well-known influence of the climate in India on the whole system, and digestive canal in particular.

"*Extracts from the Pathological Report on fatal Cholera, both rapid and protracted, founded on the Examinations of twenty-one Subjects; the youngest of which was four, and the oldest ninety years of age, the rest having been of adult and middle ages.*—Many of the characteristic appearances after death will depend in a great measure upon the number of hours elapsed before the body is opened; the later the examination, the less truly characteristic, so far, are the appearances. Those I have examined were in general opened within, or about, twelve hours after death. Bodies at this season ought, however, to be examined as soon as possible, and always within at least six hours, if it can be done with propriety.

"Of all the morbid effects in appearance, which I have observed after death in the bodies of persons who died of cholera in Danzig, the most characteristic, perhaps, has been the great congestion of blood in the sinus venosus and right auricle of the heart, and in the veins throughout the whole body; the next is the invariable contraction of the bladder; and another, which, although not apparently constant after death from this disease, is seldom or never to be met with after death from others—namely, slight spasmodic contractions, or movements, if they may be so called, in the muscular fibres here and there in the body, and more especially in the face and extremities, not only immediately,

but some time after dissolution. These resemble galvanic effects produced in the body after death.

"The veins, and right auricle in particular of the heart, were full of black blood; some was always found in the left auricle; while very soft imperfectly coagulated lumps were found either in the right ventricle or within the aorta, either immediately at its commencement, or down below its curvature. These lumps were invariably as black as the blood found in the veins and right auricle; the thoracic aorta uniformly contained some black blood, but was never full, like the veins; the abdominal aorta also contained a little, but very little; the right ventricle had always a small quantity of black blood, the left ventricle a very little. The pericardium seemed more or less flaccid, and very often contained a quantity of dark-brown serous fluid. The parietes of the heart in general seemed soft, and I fancied, in a few instances, that those of the left auricle seemed thickened; this, however, remains to be confirmed or refuted by subsequent examinations. I occasionally observed morbid blackish, or bluish, and, in one instance, whitish spots on the external surface of the heart. The lungs were in general much more bluishly speckled than in most other cases—almost always collapsed, but dense from black blood—not as in hepatization of the lungs—frothy, black blood freely oozing from incisions made into them. The pleura, in its reflections throughout from the anterior to the posterior mediastinum, and over the upper surface of the diaphragm, seemed in general of a dark dull red. The trachea, bronchia, and larynx, contained a little frothy mucus, and were otherwise wet with a compound of serous and clammy fluid; but the internal mucous surface exhibited no vascular appearance. In general there was a considerable quantity of clammy, serous fluid found effused in the chest; all was wet, exceedingly soft and clammy, more so than I have been used to see after death from other diseases. The vena azygos was invariably full of black blood. The thoracic duct was in general empty, and seemed natural.

"On detaching the calvaria from the dura mater, the latter was, in most instances, spotted all over with the black blood that instantly issued from the torn vessels, especially along the lines of the sutures, where they are most numerous, in the youngest subjects particularly. The external surface was mostly of a dark bluish colour, and dry, but clammy feel. The internal surface of the dura mater, and its processes, or continuations, were not marked by any peculiarity, except, perhaps, in the appearances being more opaque, and feeling more clammy than usual. The tunica arachnoidea was in general of a wheyey, glossy colour, and somewhat clammy to the touch. Between this membrane and the pia mater, and more especially in the lower part of the cerebellum, there was occasional effusion or filtration of serous fluid; and in all instances there was considerable effusion of this fluid between the pia mater and the cerebrum and cerebellum both; in most instances it was found in the ventricles, in the fossulæ at the basis of the cranium; and, indeed, wherever this effusion between the tunica arachnoidea and pia mater in parts of the cerebellum, and the pia mater and the brain itself at large, was observed, it was also invariably observed in the same relative situations in the spinal marrow of those bodies in which the spine was examined—which were fifteen in number. In other instances, too, where there was effusion in the brain, we had only to elevate the pelvis and loins in order to see serous fluid issue forth from the spine through the occipital foramen. There was always a considerable quantity of thin black blood in the sinuses, in the inferior more so particularly. In all cases, the congestion of black blood in the veins of the pia mater was great, in the venæ Galeni, and choroid plexuses, accompanied with varicose dilatation of these vessels; and likewise the same relative congestion of black blood in the veins of the pia mater in the spine, especially in the posterior parts of it, where these vessels, being larger and more numerous, varicose dilatation was more conspicuous. The medullary substance of the brain seemed in some instances much softer than usual, but it might have been owing, in part, to the interval elapsed during hot weather between death and the time of examination. In some in-

stances black spots were visible on incisions into the brain; at times, too, the cineritious and medullary substance both seemed relatively altered in appearance as well as consistence. The state of the spinal marrow corresponded in all cases exactly with that of the brain.

"After what has been said and implied of the venous congestion in the brain, spinal marrow, and thorax, it will be readily conceived in the abdomen, in which the large as well as small vessels are still more numerous and varied. The vena cava abdominalis and vena portæ, with the splenic and superior mesenteric trunks, and, in short, all their large tributary branches, invariably contained a considerable quantity of black blood; they seemed at times as if full of it, while the mesenteric veins always exhibited a characteristic black or bluish arborescent appearance throughout. The gall-bladder was not only of a deep green externally, but, in some instances, from a deep green to a bottle-green, and occasionally tinged here and there with yellow; and was in general distended, and full, or nearly full of fluid, generally black, and sometimes as if a little of yellow or brownish-yellow bile had been mixed up in it. The internal or villous coat of the gall-bladder was in general between a dirty yellow-brown and brownish-yellow—in a few instances it was a natural bilious yellow. The liver was invariably in a state of *engorgement* from the black blood, which, in all states of it, freely oozed out from the hepatic veins in particular, on incisions into its substance: it was in general discoloured, even after sponging the membrane covering it, and I think most in the younger subjects, and those who had not suffered from previous affection of it. The spleen was also in a state of *engorgement*, and of a black purple colour—and this independently of any alteration in its structure as referable to other morbid states. The kidneys, notwithstanding the suppressed secretion of urine, did not exhibit any peculiar change in general, further than that of venous congestion. The same was observed in the pancreas. It is not easy to say whether the ductus communis choledochus, and immediate biliary vessels, were in general contracted or not; sometimes I found greenish or vitiated bile at the opening of it into the duodenum, and sometimes I did not. I often found, in protracted cases particularly, the external parts of the duodenum and colon in contact with the gall-bladder, or near it, completely discoloured with yellow bile. With respect to the stomach and intestines generally, I cannot say that I observed any effects of the disease beyond what is referable to congestion of blood in the veins, and what might be attributed to the sedative nature of the disease. The mucous coat of the stomach, in particular, and parts of the colon, seemed, in some instances, soft, as if half macerated; indeed, the intestines generally seemed soft, and as if the internal mucous and villous coat could be separated from the muscular coat. The small intestines, I mean the jejunum and ileum chiefly, were more commonly of a dark dull red, or rather of a dark dull slate colour, on their external peritoneal coat, without any positive vascular appearance; sometimes of a pale slate colour, with vascular injection, or vascular congestion more marked; while, on the internal surface, they did not exhibit the same colour generally—still, in some instances, there was in some parts a modified appearance of it; while in various parts in others there was a manifest vascular appearance of the internal mucous and villous coat, though by no means corresponding to that externally. Besides the pale slate or leaden colour, and the dark red slate colour, I have observed a vascular dark red also—facts which will account for that tenderness, or pain, on pressure of the abdomen, so marked in cholera, especially in protracted fatal cases. In one instance of a young woman, who had died of true and very rapid cholera, the general external appearance of the whole of the small intestines was of a pale or light rosaceous hue, while that of the colon was quite pale. The mucous membrane throughout the whole canal was whitish, and as if half macerated. Whether the brown patches, which are at times observed here and there on the internal surface of the stomach and intestines, are effects of the disease, or of previous chronic inflammation, is in some instances not easy to determine. The stomach and intestines, as might be expected,

mechanically retained the last fluid ingesta; for, latterly, what came away, did so involuntarily. There were the remains of former mucus, more or less, throughout the whole digestive canal; and in true, rapid, and fatal cholera, little or no remains of feculent matter, except in its usual receptacles, namely, the commencement of the colon, the cæcum caput, in the transverse arch occasionally over across it, and in the sigmoid flexure, in which, in some instances, scanty portions of it were found. The mucous follicles in the internal membrane of the colon, at its commencement, and Peyer's glands in the end of the ileum, were occasionally found in large compact patches, more or less continuous, distinct, elevated, and somewhat indurated. Brunner's glands, as they are called, were not so observed in the duodenum. The colon externally, as well as the duodenum, particularly at its upper curvature, was discoloured at the upper part of the ascending portion, and beyond in the greater part of the transverse arch; but in the other parts it was of a pale, or pale lead colour. The peritoneum, in all its detached reflexions, was more or less opaque, having lost its shining glossy colour, more so than in most other congestive and sedative diseases of the system attended with fever, more even than in the compounds of remittent and intermittent fevers in tropical climates, with marsh miasmata, in which venous congestion is so very notorious. In protracted fatal cases I occasionally observed chronic discoloration here and there on the internal surface of the stomach and intestines—in some instances of a dark brown, in others of a dark brown-red, without being exactly vascular in appearance: at times vascular spots and patches were observed in some parts of the intestines, and the dark brown, and dark brown-red in others; they were generally in the colon, the commencement above and below particularly, in the transverse arch and sigmoid flexure. I observed parts of the colon in a gangrenous state, and chronic inflammation of the whole of the ileum, in one subject. In several instances the lumbricoid ascarides were found in the intestines. In some instances the commencement of the thoracic duct, or receptaculum chyli, seemed quite close and contracted. The invariable close contraction of the bladder, I have not omitted to mention; it was mostly lined with a little whitish mucus."—*London Medical Gazette, Dec. 24th*, 1832.

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31. *Mustard Emetics in the Treatment of Cholera.*—Mustard emetics were introduced into thetreatment of cholera by Dr. Smith of Newcastle. He had tried it in his own person, when resident in the West Indies, and, being aware that it was a popular remedy among the pitmen for asphyxia from choke-damp, he was led to suppose that it might be of service in rousing patients in the collapsed stage of cholera. His suggestion was acted upon at Sunderland through Dr. Gibson, it is said with beneficial results, and it has been since used there, at Newcastle and elsewhere. Mr. Greenhow says, that "in the cold, blue, pulseless stage of the intense type of the disease, I believe it to be a very valuable remedy in relieving the irritation of the stomach, and exciting reäction, but when full vomiting can be excited by milder means, especially when it can be done by copious draughts of warm water only, I consider it safter to avoid the irritating effects of the mustard."

The remedy is given in doses of two drachms in a cup of warm water, and repeated every ten minutes till full vomiting ensues.

AMERICAN INTELLIGENCE.

Summary of the Morbid appearances observed in Cholera. By C. W. Pennock, M. D., and W. W. Gerhard, M. D.*—From the autopsies published, and others in our possession, forming in the whole thirty-six cases, we have deduced the following summary of the pathological appearances. About two-thirds of the autopsies were made by M. Louis, and most of the others by M. Andral. All the organs were not observed in each of these cases, but with the exception of the brain and other parts which sometimes required more time for their inspection than could at the moment be allotted to them, the cases not mentioned may be fairly regarded as free from appreciable changes of structure. The *brain* was examined in thirty-one instances; of these the veins of the dura mater were more or less distended twenty-four times; effusion of serum beneath the arachnoid occurred eighteen times; the pia mater was injected in fourteen, the medullary substance in twenty-four, and the cortical in thirteen, besides the medullary substance presented a peculiar lilac tint, irregularly scattered in bands, in twelve instances. The ventricles contained more or less serum in twenty-four subjects, but the consistence of the brain was only *once* diminished. The *spinal marrow* was examined eight times, and invariably found without appreciable lesion. In twenty-seven examinations of the semilunar ganglion, it was once softened and three times reddish, but merely partaking of the tint of other parts of the body; in the other cases it was normal. The cervical ganglia of twenty-three subjects were twice of the general livid tint, and once enlarged, (peculiar conformation.)

Thorax.—Serum was found in the pericardium sixteen times; the left ventricle of the heart was hypertrophied in eleven, (nearly a third,) the right in no case. In one-third of the subjects liquid blood was found in the cavities of the heart; in the others there was also liquid blood, but more or less mixed with coagula. The lungs were examined thirty-four times, and in twenty-four were more or less emphysematous, and in five tuberculous, never however to a great extent. In seven they were more or less hepatized, besides evidence in a few other cases of a less degree of pneumonia.†

Abdomen.—The stomach was contracted in a third, and dilated in about the same proportion of subjects. The contents of thirty-six stomachs were seven times merely green or dark mucus, eight times a green liquid with mucus, green fluid in only five, yellowish liquid seven, and whitish with and without mucous flocculi nine. In exactly one-half of the number, there was a bright-red (pointillé) dotted injection of the mucous membrane; this injection seemed to occur most frequently in the cases of longest continuance; besides in one of these eighteen cases, there was ulceration, and in another, a multitude of little round depressions, not involving the whole membrane, as if made by a punch. In thirty-six cases the membrane was twice universally mammillated;‡ in the great tuberosity five times, the great curvature eight, and near the pylorus eleven; finally, in these thirty-six cases, the mammillation was entirely wanting but twelve times. The general colour of the membrane was very various, often pale or grayish, and sometimes of a delicate pink tinge, from the injection of the submucous tissue. The greater intensity of the lesions was generally thought to coïncide with the longer duration of the disease; we have not suffi-

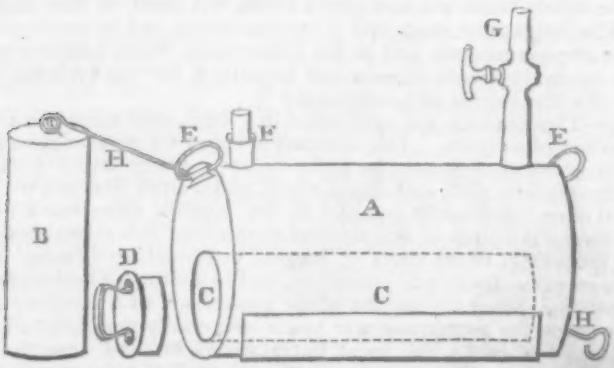
* This ought to have been inserted immediately after the fatal cases of cholera at p. 369, but was not received until after that part of the Journal was printed off.—*Ed.*

† The frequency of emphysema may be explained by the advanced age of most of the patients, the same cause may have had some influence on the frequency of hypertrophy of the heart.

‡ Mammillation consists in the rounded elevations of the mucous membrane of the stomach, first described by M. Louis, in his work upon phthisis.

cient materials to justify an assertion, and prefer leaving the examination of this question until we shall be in possession of more ample facts. The external colour of the small intestine was usually of a grayish-rose tint, but sometimes pale, or slightly marked with arborizations, and depending in the greater or less injection of the cellular tissue. The matter contained in the upper half of the intestine was noted in thirty-two subjects, and consisted in fifteen of a white liquid, homogeneous and milky in its appearance, or mixed with mucous flocculi; there was a yellow fluid in seven, and greenish in eight; mucus only in the two others. In the lower half the matter was in ten cases whitish, in four yellow, and in six greenish, but dark red in twelve. The colour of the mucous membrane was observed in twenty-nine cases; in two it was gray or pale, in three greenish or yellow, in sixteen light-rose colour, more or less universally, and in eight bright-red. The glands of Brunner were developed in a notable manner in rather more than two-thirds of the cases; those of Peyer were more visible than usual in a rather less proportion, but rarely projected above their ordinary level. The consistence of the membrane was altered but fifteen times. The large intestine of thirty-three subjects contained, in thirteen, a white matter, a dark-red fluid in eleven, and greenish or brown fæcal matter in nine; (the latter especially amongst the deaths during convalescence.) The colour of the mucous membrane was deep-red in rather more than a third,* and partially gangrenous in two; the redness was most frequent in the cœcum. The bladder was contracted twenty-eight times in thirty-six; its contents were noted in twenty-nine; seventeen contained a white matter, eleven urine, and fourteen without urine. The kidneys contained a whitish substance in their calices in less than a third. The liver was rather engorged in eleven, pale in fourteen, and softened in seven of the whole number. The gall-bladder contained a dark-green or blackish bile, twenty-three times in thirty-four; in nine a lighter-green, or with a yellowish tinge; in one a glairy fluid, and in another a puriform matter. The spleen in twenty-eight instances was enlarged four times, softened three, and normal two.

Description of a Portable Steamer and Cover. By J. K. Mitchell, M. D.



A.—A cylindrical tin vessel, eleven inches long and six inches in diameter.
C, C.—A cylindrical cavity for the reception of the iron heater B—which weighs fourteen pounds; (a common iron clock-weight.)
D.—The door of C C.
E, E.—Handles.
F, G.—Apertures. F closed by a cork, G by a stop-cock.
H is a wire hook to convey and handle the heater B.

* In another case dissected by M. Bouillaud, nearly the whole mucous membrane of the colon was of a dark brown colour and exhaled a strong gangrenous odour.

A tin foot on each side of the steamer gives its support, and obviates the expense and disadvantage of making the vessel flat at bottom.

At a red heat, the weight B, placed in C, and shut up there, will heat the water in A, and generate steam for a long time. Such a steamer may be placed under the bed-clothes with safety; or the steam may be conveyed by a tin tube from G to the patient's bed or chair. For expedition the water may be hot when placed in A.

The usual mode of sustaining the bed-clothes by hoops will do very well where moist heat is desirable; but for the application of either dry or moist heat at pleasure, the following instrument is useful. It consists of two parallel tin plates of semicircular form, half an inch apart, and large enough to cover the whole body. It resembles in shape a common wagon-cover. By placing either steam or hot water in the interspace, dry heat is produced; or by throwing the steam into the cavity which holds the body of the patient, moist heat is obtained. As this can be laid over the patient in bed, it saves the trouble of moving and replacing him.

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Case of Spasm and Severe Pain relieved by Ligature. Reported by J. K. Mitchell, M. D.—E. A. a female, aged seventeen, of good constitution and regular habits, resident in Sixth below Spruce, was attacked in the afternoon of the 15th of July, 1832, with slight cramp in the lower extremities, affecting chiefly the calves of the legs. These cramps increased in force as the day advanced, and in the evening a profuse alvine evacuation of a very liquid character, was followed by nausea and pain in the abdomen. After going to bed she vomited copiously, for about half an hour, frothy, yellowish flocculent matter of a bitter taste. At eleven P. M. the pain in the abdomen became very severe, and the intervals between the spasmodic attacks very short. The family administered laudanum freely, applied injections, sinapisms, heat, and castor oil, without effect, and finally at half past 12 A. M. of the 16th, sent for me.

I found her hands and feet cold and clammy, her pulse nearly natural, her countenance irregularly coloured, or flushed in ill-defined spots. Incessant motion and mournful cries expressed the severity of her pain. No evacuation of any kind had occurred after eleven o'clock, nor had there been any cessation of pain.

Bled her thirty-six ounces, administered laudanum and castor oil, ordered enemata, sinapisms, and dry heat with frictions. At half past one, no abatement of symptoms. Applied a tourniquet round the middle of the forearm so tightly as to demand nearly all my strength in turning the key. An immediate removal of pain and nausea ensued; the patient lost the irregular flush—the extremities became warmer, and every morbid symptom disappeared. To try the effect, the tourniquet was loosened, and the pain immediately recurred. It was then kept tight for an hour, when it was relaxed without inconvenience. Soon after I left the patient the pain and nausea returned, and the nurse endeavoured in vain to check them by the tourniquet. At half past 5 A. M. I found the case as at 11 P. M. and on tightening the tourniquet *which was badly screwed up*, I again succeeded in suppressing the symptoms. At this visit I sent for my late pupil Dr. Smiley, and after relaxing and tightening it; the tourniquet, demonstrated the perfect controul in which the pain and nausea were held.

Ordered a pill of ol. croton, gtt. j., tart. emet. gr. 1-6th; calomel, grs. ij.; rhei pulv. grs. iv. To be repeated every hour until effective. At 10 A. M. found that five pills had been taken, and an alvine evacuation of black fetid matter of the consistency of tar had been passed.

At 12 o'clock Dr. T. Harris saw the case with me. At this visit the nausea returning, it was instantly checked by tightening the tourniquet.

Once in the course of the day the pain returned slightly, and the vomiting recurred twice. In every instance the symptoms were removed by the tourniquet.

17*th*, 4 *P. M.*—The case is apparently convalescent.

Remarks.—The remarkable effect of the tourniquet in so severe a case, where ordinary measures for cure vigorously applied, totally failed to abate a single symptom or to allay a single pang, renders this remedy worthy of further trial. Hitherto experiments with it have not been made extensively enough to fix its relative value. The objections of the patient have commonly prevented the physician from making it tight enough, and the practitioner has been deterred by the dread of sphacelation. Neither should be regarded, because the patient approves when he observes the beneficial result, and the circulation cannot be entirely checked in the interosseous vessels of the *forearm*. The beneficial effect is only complete, when the hand is brought to a close resemblance to that of a patient under *cholera asphyxia*.

In the present case the tourniquet remained tight for four successive hours without the slightest subsequent disadvantage. In cases of great severity, the screw should be turned until the good effect is obtained, for it is almost certain to follow an adequate application.

This remedy, originally Japanese, travelled through China to the Russians, and was brought with the cholera into Europe, where it was occasionally approved in practice.

It is to be observed, that for a cure, ordinary medical means must be employed, for the tourniquet only holds pain and spasm in temporary check.

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On Asiatic Cholera Morbus. By Paul M. Eve, M. D. of Augusta, Georgia. —Believing it criminal to withhold from the medical profession any thing on the Cholera Morbus at this moment, and conceiving it a duty to comply with the request of the editor of the American Journal of the Medical Sciences, I send the following observations which were made last summer while I was in Europe. I had felt a reluctance to make a further communication to the public on this engrossing subject, which was warranted and justified from my late situation in the Polish army; my time and attention having been almost exclusively devoted to surgical cases, and opportunities of investigating this disease having been comparatively limited. If it is thought, however, that my observations, imperfect as they are, and that my opinion, humble as it is, can in any way serve my fellow-labourers in the treatment of this modern plague, I most willingly and cheerfully present them my views on the subject.

As I have neither time nor inclination to write a long article, I will briefly state the principal symptoms of the Asiatic Cholera Morbus, the appearances on dissection, and then deduce from them the treatment. An attack is usually preceded by diarrhœa or by uneasiness in the stomach and bowels for some days, or is suddenly announced by vomiting and purging, commencing about three o'clock in the morning, when the temperature is lowest of the twenty-four hours; and is followed and accompanied by cramps or spasmodic contractions of the abdomen. There is great prostration of the animal powers; shrinking of the external parts, particularly of the features, which assume in many places as well as the fingers and toes, a leaden or purple appearance; a cold and moist or even a wet skin, conveying when felt, the sensation of touching a frog; great thirst; the tongue is blue and cold, or moist and partly covered with a white fur; the pulse is either imperceptible at the wrist or is quick, frequent, feeble and intermitting; respiration is slow and very difficult; the voice is much altered, questions and answers being made in a low whisper; the secretions, particularly of the kidneys, are diminished, except into the alimentary canal, where they are altered and augmented, without however any bile; purging and vomiting, sometimes one only, but generally both; first the contents of the stomach and intestines are discharged, and then a peculiar whitish fluid resembling rice-gruel or sero-albuminous matter; and lastly, cramps of the extremities, most frequently of the legs, and which may be compared to a bayonet piercing the calf or most muscular part.

The appearances after death, were almost constantly the same. The external parts were very much diminished in size; the extremities, the nose, lips, eye-

lids, cheeks, &c. were of a bluish or livid colour, and the skin was wrinkled upon the hands and feet. The vessels of the brain in some subjects contained black blood, but generally there was nothing peculiar in the contents of the cranium. There was more blood in the spine, probably arising from position. The heart, lungs and large vessels were filled with a fluid resembling tar in colour and consistency. Two hours after death it was liquid and appeared like venous blood; but at twenty-four hours it seemed deprived of serosity and of the property of coagulation, and albuminous concretions were found in the heart. The stomach and intestines were either empty or contained matter similar to the vomitings and purgings; their coats were contracted and paler than in a natural state, or as was most frequently the case, presented all the varieties from congestion to sub-inflammation. The liver and vena portæ were distended with black blood, and the gall-bladder with tenacious, dark yellow, or green bile. In almost every case the bladder was found empty and contracted.

From the above symptoms and results of post mortem examinations, it would seem that the pathology of the cholera morbus may be explained by a want of oxigenation of the blood, which becoming surcharged with carbon is unfit to stimulate the heart to contraction, and hence the congestion upon the internal and vital organs at the expense of the surface and extremities. With this pathological view of the disease, and from the positive fact of there being a centripetal action of the blood, is easily deduced the principle of conducting its treatment—the equilibrium of the circulation must be restored or death will ensue. Now, mechanically speaking, there are two ways of affecting this object, either by introducing a power which will give the blood a centrifugal direction, or calling it back to the surface, by direct external applications. But the animal economy is governed by other as well as mechanical laws; the vital properties of the heart are oppressed, its energy is diminished, and its power of reäction impaired by an accumulation of blood, and this is peculiarly the case when the blood is black or not oxigenated; the stimuli or powers introduced to rouse its action would therefore be worse than useless; besides, we usually address the heart through the stomach, which is in such an irritable state as to reject even the mildest article. Upon the surface, on the contrary, there is a want of action, and stimuli are called for to excite the skin; to restore its lost or increase its feeble circulation, and thus draw the blood and heat from the internal parts of the extremities.

The plan of treatment which I have found most successful, consisted in varying the following means according to circumstances. Within the first four hours after an attack, bleeding will generally be necessary; but when prostration has ensued and when the surface is covered with cold sweat, leeches to the epigastric region, or cupping followed by warm fomentations or mustard plaster or blister, together with frictions and heat to the extremities, will afford the greatest and most speedy relief. Notwithstanding the various and multiplied articles of the materia medica which have been recommended, as opium, calomel, oxide of bismuth, cajuput oil, spirits, &c. to allay vomiting and purging and calm spasms, I must give my decided preference to dermoid applications, which invite the blood from the heart, lungs, liver, stomach, &c. the congestion of which produces these symptoms. I do not deny that there are cases which can be, and are relieved by medicines; but, since we possess no remedy which can drive the blood from the centre to the surface—since all internal medicines are apt to excite vomiting, one of the most painful, distressing and fatal symptoms of cholera—and moreover, since we possess means which can be easily managed and varied to suit circumstances, and whose action is plain and evident to the senses—I cannot forsake them to launch upon the sea of experiment and conjecture, in the treatment of this rapid disease. The language of those who advocate the administration of internal remedies, is to give so much of a mixture or so many pills, and if they produce *vomiting*, repeat the dose; but if a cure is to be effected by relieving the symptoms, why give those medicines which excite or aggravate them? An infusion of peppermint, or the oil or es-

sence of this plant, with a few drops of laudanum, in a little warm brandy and water, is what I have found best adapted for internal use; and even this should be prohibited when it produces vomiting. This symptom is often so distressing and so easily excited, that the stomach will reject whatever is presented to it. In such cases, I rely upon the horizontal position, perfect rest, and heat and frictions to the abdomen and extremities, without administering any thing internally. The warm bath I have known to be of great service, but the time necessary to prepare it and the exposure of the body to the air, are serious objections to its general employment. The same will not hold good in relation to the vapour bath, where the patient can be kept continually warm. Excessive thirst is best relieved by cold gum water, or by a piece of ice dissolved in the mouth.

Having enjoyed an opportunity of comparing the practice of the English, French, German and Poles, while stationed at Warsaw, in the months of May, June, July, and August, of the past year, and having experienced personally the disease, I feel some confidence in recommending the above treatment of the Cholera, to the American practitioner of medicine: and in support of its correctness and superiority, I will state that at Wisnia, a town of Gallacia, out of two hundred and forty persons attacked with it who were subjected to cutaneous frictions, and to the internal use of only an infusion of chamomile and peppermint *two alone died.*

To prevent an attack of cholera, cleanliness and sobriety ought to be most rigidly observed. All sudden or great impressions upon the system, as changes in the temperature of the air, cold and moisture, or emotions of the mind, excessive joy, fear, and the depressing passions, should be carefully avoided. The body to be kept moderately warm, a belt of flannel is recommended to be worn; and the mind calm, and confiding in a protecting Providence. The diet should be regular, and without any material change in the accustomed repasts. Emetics and purgatives are to be avoided, and certain articles of nourishment which are known to predispose to colic, or cholera affections; these are bad beer, sour-crout, cabbage, salad, beans or peas, spinage, cucumbers, pickles, unripe sour fruit, musk and water melons, cold meats, sour milk, &c. Good soups, beef, mutton, veal, fowls, eggs, Irish potatoes, bread, and tea in preference to coffee, should constitute the principal food of those who inhabit an infected district.

After all that has happened to admonish us, we can still hope that the cholera may not reach the Southern States. Its general course has been northwestwardly; from Calcutta it reached the Russian Empire; from Constantinople it passed to Great Britain. Although it existed in Hungary and in Vienna, still Lombardy, Switzerland, and Italy, have escaped; and the same thing is applicable to France and Paris, in relation to Spain and Portugal. It has not even existed in cities of the South of France, and Quebec and Montreal are nearly in the latitude of Paris; besides, these two Canadian cities are remarkable as being the most filthy and ill-ventilated of America. If it has progressed in a north-westwardly direction, and if it has avoided a southern latitude in Europe, why may we not escape its dreadful ravages? Let us, however, be prepared to meet it, that if it ever does come, we may be ready to cure the distressed, to relieve the afflicted, and to lessen the sufferings of the dying victim.

Augusta, June 30th, 1832.

On the Symptoms of Cholera in New York, with some Remarks on the Management of the Disease. (Read before the Boston Medical Society, July 23d, 1832, by JOHN WARE, M. D., and communicated for the Boston Medical and Surgical Journal by the publishing committee.)—The object of this communication is to give some notice of the symptoms of cholera, as they were presented to the writer during a short visit to the city of New York, since its prevalence there, and some suggestions with regard to the management of the disease.

A few days' opportunity only of observing so formidable a malady, may be thought hardly sufficient to justify an individual in offering any thing concern-

ing it to his medical brethren or to the public. But it is to be recollected, that in the case of a new disease, we are all obliged to approach it in a state of at least partial ignorance; he, therefore, who knows but little from actual experience, may be able to impart something. His labours are still more likely to be useful in preparing others for its attack, if it present a variety in its aspect, as it appears in different places; if for instance it differ in Canada and New York, from the description we have had given of it in Asia and in Europe.

This appeared to be the case. At least the impression made by the inspection of patients labouring under cholera, was different from what the usual descriptions given of it had prepared me to expect. Not that there was any variation in the symptoms or course of the disease, which could for a moment throw any doubt on its identity: but there was a very considerable variation in the relative prominence of the phenomena.

So familiar have we become with accounts of cholera, that, instead of describing the disease, as it presented itself in detail, it will be only necessary to refer to those symptoms concerning which some particular remark occurs. The most universal of the symptoms, were the deadly coldness of the whole surface of the body, and the soaked, sodden and shriveled appearance of the hands and feet. Generally, also, there was a bluish or livid tinge of the skin of these parts, particularly of the extremities of the fingers beneath the nails. The hand in some instances resembled that of a person who had been working in a black dye. The blue or dark colour of the face and of the rest of the body was not very common; much less so, according to the information of those who had visited Montreal, than it had been there. Still, a few patients were seen so dark, as not to be readily distinguished, across the ward in which they laid, from mulattoes. The cold tongue, which has been described as so strikingly characteristic in some places, was noticed in but a small proportion of cases. It had generally a slight white fur. The pulse, though commonly very small and obscure, was not so frequently extinct at an early period of the stage of collapse as was expected; and in some cases it was found quite distinct and of good volume, at not a very long period before death.

The vomiting and purging were less violent and frequent than had been expected. It was rare to witness more than one or two patients suffering from either, during a visit to a hospital containing twenty or thirty. They seemed to take place chiefly in the earliest period of the case, and in some, never existed in any violent degree. One patient was seen at 11 A. M. whose bowels, according to his report, had been in a regular state the day before, and who had only had, in the course of the morning, three or four discharges in the privy. He had not vomited at all; yet he had scarcely any pulse—his skin and tongue were cold, and his hands and feet were affected by cramps. He had regarded himself as being well on rising in the morning.

Nearly all the subjects of the disease complained of cramps, or said that they had been afflicted by them when first seized. Still, very few were seen labouring under them so severely as to occasion any marked external demonstration of suffering. In nothing, indeed, did the cholera of New York differ more from the most common descriptions, than in the absence of any *indications* of great distress. It is true that a few seemed in much agony when vomiting, or undergoing spasm; others complained bitterly of thirst and oppression, and burning at the stomach; but in general there was little complaint, and little disposition to notice external objects at all. The aspect of the patients was almost that of indifference, and unconcern as to the event in themselves and in others. They seemed like persons totally absorbed in their own sensations, although in sensations which were not of a very acute or distressing character. They appeared often as if in a benumbed or stupefied state; yet were without difficulty roused, and were at once perfectly sensible. Neither was there the sulkiness or irritability which has been said to appertain to patients with cholera. They answered questions readily and pleasantly. Though surrounded by medical men, and undergoing frequent examinations, I saw no instance of the manifestation of ill-

humour. Often, as soon as a physician approached the bed-side, the tongue would be protruded and the arm stretched out.

In some cases the peculiar hollowness of the countenance, and the shrinking of the body and limbs were strongly marked; and in these, the aspect of the dying person was almost terrific. But these appearances were frequently wanting even in bad cases, and I am not aware that the countenance could have been always distinguished with certainty from that which is exhibited in many other severe and exhausting diseases. Neither did the voice vary essentially from that of patients with such diseases. The shrieks and cries of pain, which accompanied the vomiting and spasm, were perhaps a little more characteristic.

The respiration was not always accelerated; but generally at least was performed without much action of the diaphragm, and was consequently attended by considerable heaving of the chest, and some labour. The chest seemed also as if imperfectly distended. In the act of death, this mode of respiration was continued; it simply became less and less full, till it ceased altogether. Only one individual was noticed, in whom death took place with a kind of breathing like that so commonly witnessed, viz. that accompanied by the rattling of mucus in the throat.

The excretion of urine was almost universally wanting during life; and but little was found in the bodies of those who were examined, except, as was observed by a gentleman who had made many dissections, where the vomiting and purging had ceased for a long time before death.

From the dissections which were witnessed, and from the accounts of gentlemen* who had made a large number, it was inferred that the heart and large vessels did not generally contain any large quantity of blood. The heart was found sometimes empty, and sometimes all its cavities were moderately filled with blood. The arteries always contained black blood. On comparing blood found in the descending aorta with that contained in the corresponding part of the vena cava, that in the aorta resembled common venous blood, whilst that in the vein was still darker, thick, and imperfectly coagulated, being nearly of the consistence and colour of tar. In the cranium, there was an effusion of serum into the ventricles and at the base of the brain. The blood-vessels were quite full, but not usually so. No morbid appearance was observed in the spinal nerve. The lungs were considerably congested. The stomach and small intestines exhibited a slight reddish tinge when held up to the light, but showed no signs of inflammation. The large intestines had a whiter or bleached appearance. There was no unusual dryness of the peritoneum. The whole canal was filled with the peculiar liquid matter which constitutes the evacuations in this disease. This was generally in large quantities, of a dirty grayish-white colour, though in one case tinged with green, and of a flocculent appearance; sometimes quite thin, sometimes as thick as thin hasty pudding. It resembled gruel which has not been sufficiently boiled, or coagulated milk, the curd of which has been very finely broken up. Similar evacuations are occasionally witnessed in severe cases of common bowel complaints. Not a particle of fecal matter, or matter coloured by bile, was noticed in any case, unless indeed the green colour just mentioned was occasioned by the presence of bile. The gall-bladder always contained bile, and its duct was pervious.

It is a matter of some interest and importance to determine whether we have any reason for believing, as some have done, that the spasmodic or malignant cholera is merely a more intense form of common cholera morbus, and is produced by an accumulation and concentration of the ordinary causes of the latter disease. That they have many symptoms in common, is not to be denied. It is quite certain that the common exciting causes of cholera morbus, such as irregularity and excess in eating or drinking, great fatigue and exposure, may also operate as exciting causes of spasmodic cholera. But, on the other hand,

* Dr. Morell, of the Bellevue Hospital, informed us, that of the first twenty fatal cases all were examined after death.

the course which the complaint takes, and the character of the symptoms in which it terminates, render it probable that there is, previous to these exciting causes, some peculiar predisposition of an unknown nature existing in the constitutions of the whole population where it prevails. Our common cholera, in some cases, reduces a patient to a state of great and irrecoverable exhaustion. It is accompanied by severe cramp, cold extremities, weak and fluttering pulse, ending in death. Yet, in a parallel state of exhaustion, is the aspect of the subject the same? Do the peculiarities of complexion, the state of the extremities, and the character of the evacuations, correspond? In common cholera, also, the exhaustion seems to be commensurate with, and to be produced by, the vomiting, purging, and spasms; in the spasmodic, on the contrary, there is no such correspondence. The most rapidly fatal cases are not always those in which the vomiting, purging and spasms have been the most violent. Some individuals fall into the state of collapse almost at once, after but a short continuance of the symptoms which usually precede it.

It is desirable also to determine whether it be possible, in the earlier stage of spasmodic cholera, to distinguish it with certainty from an attack of the ordinary disease; to determine, for instance, in a place where cholera was not prevailing, that a case attended by vomiting, purging and spasms, was or was not the commencement of the epidemic. I fear the practitioner must wait for the symptoms attending the stage of collapse, before he can feel authorized to pronounce with certainty. In forming our judgment in such a case, we are to be chiefly governed by the state of the skin and pulse, and by the character of the evacuations. When the skin continues full of red blood, after considerable vomiting and purging; when the pulse remains full and of tolerable volume, and the extremities warm; when also the evacuations have a fecal or bilious appearance, one could hardly be mistaken in regarding the case as one of common cholera. Where, on the contrary, the pulse becomes quickly small and weak, with a dirty, dingy and bloodless skin, cool extremities and dejections of a light flocculent character, one would readily suspect spasmodic cholera; yet we surely see many such cases which the event, in ordinary seasons, proves to be nothing more than the common disease. Still, in such a case, if the malignant disease were either prevailing or expected, a physician could give no other than a doubtful opinion as to its character.

It did not appear, from such observation as was made of the effect of remedies, that any material variation was produced in the rate of mortality in cholera by the measures employed. This indeed seemed to be the general impression of those engaged in the management of the disease. And, it may be asked, has not this been the result, wherever it has prevailed, so far as we can judge from the reports of cases and deaths which we find in various publications? We have had, it is true, many flattering recommendations of peculiar plans of treatment, and general statements of their efficacy; but does not the general uniformity of the returns of dead and convalescent, in different places, satisfactorily show, that the good effects of remedies have chiefly existed in the imaginations of those who have employed them? The probability is, that this epidemic, like all others, varies in severity in different places. This accounts for the apparently greater success of that method of treatment which happens to have been employed where the disease has been mild. So, too, when it first makes its appearance in a new spot, it seizes on the worst constitutions, and on persons most strongly predisposed; and hence its great and appalling mortality. After a while it attacks individuals of better constitutions, and who are less strongly predisposed; these make a more determined resistance to the disease, and recover perhaps in a greater proportion. Hence, towards the close of the epidemic, the cases seem to be more tractable, and to be more under the influence of remedies.

How can we, except by means of some such explanation as this, account for the apparent success which has attended modes of management the most opposite in their character, unless we believe the statements which are made to be

wholly without real foundation, and to have had their origin in the want of accurate observation, the self-deception, or the wilful misstatement of their authors? Many physicians are loose observers, many are loose reporters, and some are both. I know not in what other manner we can account for the assertion of Broussais, that he loses but one patient out of thirty, while all his medical brethren are losing half, or very near it. One might expect, if his statement were actually true, that public opinion would soon force the whole faculty to the adoption of a method of management so successful; and that a Paris mob might imagine the physicians of all the hospitals, except that of the Val-de-Grace, engaged in the combination to poison the people—since in the latter the patients all came out alive, and in the former all dead.

It is unquestionably a humiliating confession to the medical art, that fifteen years' experience has not taught us any mode of arresting the destroying progress of this disease. Yet, if it be true, it is better that we should know and acknowledge it; since then, instead of being distracted by the claims of opposite and contradictory statements, we shall direct our attention to the devising of new methods of treatment, or at least to means of prevention. The plague, which was once the scourge of Europe, is no more within the controul of medicine, than it was centuries ago; but it has been banished from countries which it once visited, by preventive measures. The same is true of yellow fever, and the same may be found true of cholera.

According to this view of the subject, the treatment of cholera cannot yet be reduced to any fixed rules, but must be, in the main, tentative or experimental. It is not the intention of the writer, in speaking of means of treatment, to offer any opinion as to their probable efficacy, but merely to direct the attention to such as appear worthy of a *very thorough* trial; for it is obvious that only the *very thorough* trial of a remedy gives it any fair chance of success in a disease like this.

We may also remark, that the rapid course taken by this disease does not allow us to place dependence on remedies which require time to produce their effect. Our whole range is confined to a very few hours. Except, therefore, in the premonitory stage, we must confine ourselves to means which operate almost immediately.

We should also bear it in mind, in treating cholera, that, in all cases of violent action or of extreme want of action, the susceptibility of organs to the influence of remedies is either very much exalted, or very much diminished; generally the latter. Thus in fainting from excessive hæmorrhage, great quantities of stimulus are required to produce an effect, and they must be frequently repeated in order to keep up the effect. Large doses of laudanum are also borne without the production of its usual operation. The same is true of any violent pain, and of excessive secretions. The power of the medicine given, is neutralized by the disease. Thus a man with diabetes will bear twenty or thirty grains of opium in a day; and one with severe colic, two or three hundred drops of laudanum in a few hours.

It should also be premised, that the remarks made with regard to treatment refer to the confirmed state of the disease, that, viz. in which its peculiar character is fully developed. There is a premonitory or preparatory stage, in which the state of the system and the symptoms of disease are different, and require different management. It is not, however, in this stage that patients are generally seen in hospitals, nor usually in private practice; but it is in this stage that many physicians are so sanguine with regard to the effects of remedies.

Whatever be the variety of internal means recommended by different practitioners, they almost uniformly agree in the propriety of external warmth and stimulus; and in all diseases attended by coldness and want of action in the surface and extremities, the restoration of warmth and circulation is one of the first objects which suggests itself. In cholera, this is very strongly called for, since not only are the external parts cold and inactive, but, as some assert, the internal also. More proof, however, is required of the coldness of the internal

organs than has yet been given: there are circumstances which render it doubtful, and it is a point which should be carefully investigated. Still, no doubt can exist of the coldness of a considerable part of the mass of the body.

Now it is very true, that this coldness is one of the consequences of the morbid condition on which the disease depends, and not the morbid condition itself, and that removing this effect will not prove a remedy for its cause. Yet it is also true, that many of the secondary effects produced by disease, are an obstacle to the removal of the disease, and obstruct the salutary efforts of nature or the influence of remedies. We often assist nature, and art also, in the struggle with the primary cause of disease, if we can artificially remove or suspend these secondary effects. Thus we assist the cure of dyspepsia by neutralizing the acid generated in the stomach as a consequence of this disease. So, too, where the system is sinking from a poison which operates by a suspension of that influence of the brain, which is necessary to respiration, if artificial respiration be kept up for a sufficient time, the effect of the poison ceases, and life is preserved. Something like this may be true with regard to the power of maintaining the animal heat in cholera. The reduction of the temperature of a large portion of the body and circulating fluids, for several hours, would alone be sufficient to cause death, were the system otherwise capable of struggling with and overcoming that internal state in which the disease consists. If a man, with the ordinary power of maintaining animal heat, were exposed to a degree of cold which should reduce his temperature to seventy-five degrees, this reduction alone would soon destroy life. This often happens in cases of shipwreck and exposure at sea, where persons are chilled to death by immersion for a long time in water at a low temperature. The patient with cholera is placed in circumstances somewhat similar. His power of resisting cold being lost, he is cooled down by an ordinary atmosphere as much as a healthy man by the low temperature of the ocean.

A resemblance has been supposed to exist between the patient with cholera and an individual frozen by exposure, and it has been recommended to employ in the former the same treatment as in the latter case. But the resemblance is not so close as that which has been already suggested. In persons frost-bitten, the external parts are actually frozen; or at any rate reduced to a much lower temperature than those cholera patients, whilst the internal parts retain their powers of resistance. This at least is true of recoverable cases. Although the temperature to which the surface is reduced is much lower, yet the whole body has not been equally cooled, and the heat providing powers not equally exhausted. No one would think of dashing cold water, or rubbing melting snow, over the body of a man chilled by immersion in cold water, to restore his animal heat; neither is it probable that this measure would be attended by any beneficial result in cholera.

We may regard it, then, as an essential part of the treatment of cholera, whatever means we may otherwise employ, that warmth of the body should be restored by external heat, and its activity promoted by external stimulants. It is by no means a matter of small importance by what agents we effect this. Let us recollect what we are to accomplish, viz. to warm through a solid mass of flesh. In order to impart heat, we must in the first place surround the body with bad conductors, which will retain the heat which is communicated to it, viz. with blankets, rugs, or comforters. We must, in the next place, apply, within these, substances which contain a good deal of heat, and which will give it out readily to the body; such as bottles of hot water, hot bricks, billets of wood, bags of sand, &c. &c. We may see at once how insufficient air-baths must be, as indeed they have been found. Air is a slow conductor, and contains but little heat. How long would it take to raise the temperature of a dead body twenty degrees in an air-bath? I suspect many hours. Hot air may warm the skin readily; but in cholera we must go deeper than this—we cannot rely on the heat-making power of the system to aid us in our endeavours—we must use means which shall extend as far as the coldness extends. Neither can we ex-

pect any amount of external covering alone to raise the temperature of the body. Blankets assist in the accumulation of heat, when the body is capable of generating it; but they in no degree tend to warm it, when it has not this power. They could never warm a drowned man who had ceased to breathe.

The consideration that the heat-producing power is suspended in the cholera patient, should lead us to be cautious in relaxing the application of external warmth. It is not sufficient that the patient feels warm; the means should be persevered in, till a decided reäction has taken place, indicated by the state of the pulse, countenance and respiration, and should even then be cautiously relaxed. Neither should these measures be delayed till the patient is actually cold, when the stage of collapse is coming on. The loss of heat should, as much as possible, be prevented, by a great abundance at least of external covering, if not the application of absolute heat.

At the same time that the external warmth is thus provided for, it is important that the means used should not in some measure defeat their own object, by depriving the patient of fresh and cool air. Any imperfection of respiration, essentially impedes the keeping up of the animal temperature; and both foul air and warm air, are productive of such imperfection. We should be cautious, therefore, that the rooms of cholera patients be not unduly heated, and that an abundance of fresh air should always have access to them.

External stimulation seems indicated, as next in importance to external warmth. This might be effected in various ways; but none seems more speedy and certain in its operation, than the poultice, or plaster of flour of mustard and vinegar. How extensively it might be proper to apply this, experience only can teach us. Few, even of cholera patients, are for any long time insensible to its effects.

A powerful, and, it is believed, a new method of exciting reäction by external application, has been adopted by Drs. Lee and Roe, at one of the New York Hospitals, and, as has been stated, with remarkable success. It consists in the friction of the whole surface of the body, when in the state of collapse, with an ointment, composed of mercurial ointment, camphor, and capsicum. Very little else is done, and nothing but a small quantity of drink, or of ice, given internally. We shall no doubt derive, ere long, a full account of the particulars of this mode of practice, and of the success which has attended it, from these enterprising physicians themselves; and it would be premature to give, at the present time, any thing more than this general statement. It is certainly, however, one of the measures which deserve a thorough trial from those engaged in the treatment of cholera.

But little can be said of internal remedies. The general impression seems to be, both at New York and in Canada, that in the comfirmed disease, nothing has as yet produced any very decidedly favourable effect, although all methods of practice have been tried; the calomel practice, the bleeding practice, the ultra-stimulating practice of spotted fever, the moderately stimulating practice, the camphor practice and the ice practice. Still, we are hardly ready to give up in despair, and may inquire, whether it may not still be worth while to go over the ground again with some of these measures, unless we should be so happy as to escape a visit from this disease. The measures to which it might be desirable to give this trial, would be,—

1. The highly stimulating practice of Drs. Miner and North, by means of immense quantities of opium, brandy, capsicum and essential oils. So far as tried, this course has been said to be attended with unfavourable effects. Might it not bear a fairer chance of success, if combined with the injection of a saline solution into the veins? It may be, that these stimuli fail of their accustomed effect, from the want of a sufficient amount of circulating fluid.

2. The mercurial practice, carried to the greatest possible extent, both internally and externally. Dr. Chisholm administered immense quantities of mercury to his yellow fever patients; one patient having used over five thousand grains, and many having actually taken more than a thousand grains by the

mouth. We might do the same in bad cases of cholera, at least without danger; and besides the administration of calomel by the mouth, and frictions, we might also make use of mercurial fumigations continued for a great length of time, a whole day for instance, which would not only act mercurially, but would also assist in raising, or at least in maintaining when raised, the animal heat.

3. The administration of ice internally, according to the method of Broussais. Though not placing unqualified reliance on the accounts given by this teacher of his practice, and believing him to be much wanting either in accuracy or in sincerity and good faith, the peculiar circumstances in which we are placed with regard to the management of cholera, renders it our duty to employ all those means for which very decided success has been claimed.

4. Bleeding from the general circulation. It is remarkable that no remedy has been more strongly recommended than this, in works on cholera as it has elsewhere prevailed; and yet that no decided success has followed its employment in this country, so far as we have any evidence. Still we are led to believe, such is the authority on which it has been recommended, that there may be states of the disease in which it will be followed with advantage.

5. Injection of large quantities of warm water, or of a warm saline solution, into the veins. So far as we have been informed, the immediate effect of this measure has been to restore the circulation and warmth of the patient; in fact, to rouse him from the state of collapse. Of its final success, we know less. It is remarkable that, of all the cases mentioned in a late communication in an English Journal, and republished in the Boston Medical and Surgical Journal, we are not told of the result of a single case. It was employed in the case of a patient at the Bellevue Alms-house, at New York, by Drs. Morell and Baker, and twenty-four ounces of warm water were introduced into the veins. The immediate effect was highly promising, but relapse and death ultimately took place. We have been since informed that an instance of complete recovery has followed the saline injection, in the Crosby street Hospital, under the care of Drs. Rhinelander and Dekay. Measures which afford even a temporary revival should, in this disease be seized on with eagerness. If therefore the injection into the veins proves to be as effectual in the promotion of a temporary reaction as has been asserted, it may answer a valuable purpose by prolonging life, and thus affording time for the operation of other remedies, even if it should not be sufficient for the preservation of the patient. Like external heat, therefore, its employment should be cautiously combined with that of all the other remedies in different cases; since we may, perhaps, arrive at that success from the judicious combination of means, which we seek in vain from perseverance in any single course.

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Remarks on the Pathology and Treatment of the Disease termed Malignant Cholera. By J. P. Hopkinson, M. D. Demonstrator of Anatomy in the University of Pennsylvania; Lecturer on Anatomy in the School of Medicine, &c. —The disease termed malignant cholera, so generally fatal under all modes of treatment, so unaccountably cured occasionally by almost any course, however extravagant or contrary to former experience, seems still to call forth the ingenuity of the profession in devising something new in the treatment, or in endeavouring to find some specific whose power shall never fail. Is it not strange that medical men should now for the first time have abandoned all their principles of practice, and throwing aside reason, catch at any shadow that was passing by, in the gloom of deficient or erroneous pathology? What must be the conclusion of every practitioner, who, anticipating the approach of the disease, and wishing to prepare himself to do justice to his patients, consults any or all of the innumerable books, pamphlets, suggestions, &c. &c. on the subject? Can he draw one single principle—on which to reason and exercise his judgment? Can he find one sound pathological view of the disease, founded upon observation and justified by general experience in practice? It is a melancholy truth he cannot—and yet this cholera has been distinctly before the

profession for at least fifteen years, and for probably more than a century has the same affection, or one very similar to it, been known. In this state of things, I also had formed my speculations, and felt the same indecision as to the best mode of practice, when at length the epidemic visited our city, and soon presented itself characterized by all its most alarming features. The first case of which I had any personal knowledge, was in a post mortem examination I was called upon to make. Although this case was complicated by a strangulated femoral hernia, and attempts were made to explain it away as not a case of cholera, yet the very slight vomiting, the sudden death, the blue skin, the corrugated fingers, the immense collection of rice water fluid shut up in the intestines, the total suppression of urine, and finally, the universal congestion of the stomach and bowels, led to the evident conclusion, that the immediate cause of this woman's death was of a nature different from ordinary strangulated hernia; in fact, that, although only one or two cases had as yet occurred in the city, this could not be considered other than malignant cholera.

The second observation was made upon a strong, muscular man, brought into the cholera hospital a few hours after the attack, presenting symptoms of the most malignant character; he was pulseless, and covered with a cold, clammy sweat; had a cold tongue; the blue and doughy skin; anxious countenance; whispering voice; the sunken eye, &c. and he was clamorous for cold drink. External heat, turpentine, frictions, ice, carb. ammonia, camphor, opium, warm brandy-toddy, and finally, injections of brandy and water into the veins, were *tried* in succession, and interrupted only by the hand of death, about five hours after his admission. Here it may be remarked, that, although stimulants of the most active and diffusible nature had been introduced not only into the stomach, but into the very heart itself, yet no perceptible impression was made upon either—and the unfortunate patient seemed to sink as rapidly as if nothing had been done.

The next case of decided cholera which came into the hospital was a coloured man, with cramps, vomiting and purging; he was on the very eve of the collapse, but had pulse; he was bled—the pulse rose—the bleeding was repeated, until three pints of blood were extracted; he took also some vol. alkali; no difficulty was experienced in bringing about complete reaction, and this man soon recovered. The practice pursued in the hospital after this was *unsettled;* all the various plans recommended, of dry frictions, bleeding, hot air, camphor, calomel and opium, vol. alkali, &c. were resorted to and failed in almost every case in a collapsed condition. Some of these cases were examined, and presented the usual appearances described in any treatise on the subject. It was the bad success of this treatment, added to the results of subsequent inspection of the body that first gave me a disgust for the stimulant practice. I saw no marks of inflammation except in cases of drunkards, or where it had probably existed antecedent to the attack of cholera; in one case inflammation was found in the caput coli; in another, the rectum was most violently inflamed, and sometimes the glands of Peyer were enlarged, but these appearances were by no means so general as to justify any conclusion as to their connexion with the immediate cause of death. Dissection had not as yet satisfactorily located the disease in the central nervous system. The lungs were almost universally healthy, and thus the abdomen alone remained to be studied in our pathological researches. As already stated no decided marks of inflammation presented themselves in any of the abdominal viscera—adequate to account for the sudden death, nor in fact are the symptoms during the course of the disease those of inflammation—but more of this presently. The appearance of the intestines externally is so peculiar, that no one who has once seen them, can be deceived. In every case I have examined, the most decided proofs of universal congestion were apparent. When the omentum was raised, the intestines, (generally distended,) presented a mottled surface formed of small bluish and red points, the former preponderating, so as to give altogether a dark chocolate appearance—a closer examination traced the connexion between these

specks and the veins—of which the small ramifications, the branches and the trunks, were filled with dark blood. The mucous surface was more variable in its appearance. The valvuli conniventes being in some places of a bright red—in others pale. *Ulcerations* or *stellated inflammation* I did not find in any case in the intestines. The inspection of the stomach was equally unsatisfactory, or perhaps more so. In some cases inflamed, in others not; sometimes having a softened mucous surface, easily scraped off, while in others again, this membrane retained its ordinary degree of firmness; in one word, the stomach, in this respect, presented nothing I had not often seen, and what dissections made in various diseases do not reveal every day. The only condition at all general was a congestion of the veins apparent on the external surface, and its being exceedingly large, flabby, and filled with fluids. The liver, kidneys, &c. although sometimes congested with dark blood, or perhaps disorganized by some old affection, showed no marks of recent organic disorder that were appreciable; bile and dark blood sometimes flowed when incisions were made into the liver, and there was invariably a total suppression of the secretory action of the kidneys; when the papillæ of these glands were compressed, a milky fluid exuded from the orifices of the tubuli uriniferi. The bladder was empty and contracted. The spleen had nothing remarkable in its appearance: there was no bile in the intestines.

Thus it would seem, since the morbid conditions of the nervous system are too abstruse for our detection, that nothing has been gained by the post mortem examinations, if it be not that a universal venous congestion pervaded the whole abdominal cavity, accompanied by a suppression of the natural secretions. It then appears probable, that the cause of cholera, whatever it be, by diminishing the heart's action, and thus lessening the activity of the arterial circulation, and by producing a torpid venous circulation, perhaps the result in part of the former, perhaps produced by the direct operation of some morbid poison on the nerves, operates mainly upon the abdominal viscera; here it is, as we know, that the proximate causes act in bringing on an attack; and here it is we find developed the most prominent symptoms.

Now let it be understood, that although this pathological view became the foundation of the practice hereafter to be explained, it is not put forth with so much confidence as to limit further researches into the nature of this strange affection. One thing only is insisted upon, that, whatever the remote cause be, that at this particular time, in some circumscribed locations, and not in others, predisposes to the disease termed cholera; the most prominent symptoms are developed in the abdominal cavity, and to that point must we turn our attention, would we arrest the approach of death. The coldness of the extremities, therefore, the profuse sweats, the cramps of the muscles, the cold tongue, the immoderate thirst, &c. are not to be regarded, except as mere symptoms remotely connected with the morbid actions that are going on in the interior of the body.

A natural consequence of diminished arterial circulation is diminished temperature—but if the cause that produced this feeble action, still continue to operate at the centre, how vain must all efforts to arouse action be, when applied to the extremities.

Again, as regards the thirst, since there is neither increased heat nor dryness of the mouth, upon what reasoning or theory do we allow the patient the free, unrestrained use of ice or cold drinks. Is it because he demands them? and is nature always so true in her requests, that we should listen to her? Our patient may be indulged perhaps to his detriment; I have known the water and melted ice, that have been allowed to a patient at intervals during the space of an hour, to be thrown up from his stomach *nearly as cold as they went down.* There cannot therefore be much increased heat in the gastric organ, and we have a right to conclude that the effect of cold and moisture is not demanded, since evident *coldness and moisture* actually exist in the mouth, and in all probability the stomach is in a similar condition. To those who are disposed to

doubt the correctness of the theory here advanced, and who, bound in the chains of former doctrines, cannot give up the impression of an augmented temperature in the stomach, causing the thirst—to all such, let me here make one remark—what is the actual condition of the patient's skin? and what are his feelings connected with that condition? Cold and wet is the reply to the first—insufferably hot, answers the second. Have we not then before our eyes and under our fingers, a cold, moist skin, giving the sensation of oppressive heat?—a phenomenon as yet not understood, and must we of necessity reject the same idea as applied to the stomach; merely because we cannot explain it? Look at the collapsed, dying individual, with a skin like marble, covered with the morning dew—what are his sufferings if attempts are made to confine him under covering? Does he not resist with all his strength, and cry out he is burning with heat? With this fact before me, I am content to say, there is a total destruction of all the natural sympathies in this disease, and referring the thirst, the cramps, and the feelings of heat, to morbid nervous actions, stop my speculations here, and follow that practice which experience proves most beneficial.

The profuse sweats can hardly be called either a secretion or an excretion. Our knowledge of the capillaries is as yet too unsettled to establish any theory upon this point; but when we see those parts of the body most remote from the centre of the circulation, and most deficient in arterial circulation, pouring out these sweats more abundanlty as they are more distant, is not the conclusion warrantable, that they are a kind of exudation, coming perhaps from the veins, (which are visibly more congested in the same ratio of distance from the heart,) and not the result of any arterial excitement? Let us now only transfer our attention to the interior of the body—let us admit a condition of the alimentary passages, similar to that remarked upon the skin, and have we not at once, an explanation of the immediate cause and source of the rice water discharges? Here then we unite the various considerations that have become the basis of our pathology and of our treatment of cholera.

The cramps cannot be easily explained. I feel a hesitation in offering a theory upon the subject, and shall defer any further remarks respecting them for the present.

In proceeding now to speak of the treatment, we cannot give a better idea of what has hitherto been done, than by the following extract.

"In each country where this disease has appeared, we find a very different and opposite treatment recommended, as one proved by experience to be the best. In India, bleeding, calomel, and opium, were the favourable remedies. In Russia, a practice as inert as a few grains of the sub-nitrate of bismuth in frequently repeated doses. In England, the mustard emetic. Again, in different countries, remedies contradictory, as bleeding and transfusion, are proposed and made use of in full confidence. Heat applied to the body in every form, as well as the cold affusion. Drinks altogether denied, or ordered in unlimited quantity, both hot and cold. They have attempted to restrain purging and vomiting by the most powerful narcotics, enormous doses of opium; and they have also encouraged them by various emetics and purgatives. Some try to allay the irritability of the mucous membrane; others goad it with the most powerful stimulants, ardent spirits, and ammonia. Others place their reliance chiefly on the mild alkalies, soda, and magnesia, to neutralize some imaginary agent; and, again, some indication has been found for acids; whilst many have trusted a trifling carminative, as essence of mint, or cajuput oil, to combat these alarming symptoms;—illustrating the remark of Sir William Crichton; 'it is a most melancholy confession, but one not the less true, that after cholera has spread its devastations from Ceylon to Archangel, from Oranburg to Berlin, we are almost as far from a rational methodus medendi as we were when it first appeared on the banks of the Ganges.'"*

* Johnson's Medico-Chirurgical Review, for April, 1832.

Here is a summary of medical authorities upon the best mode of treating cholera. Uncertain as has always been the science of medicine, our records do not show any thing quite so extravagant as this—for although different systems of treatment and different theories have, in succession, each had its turn, it is something new to see so many put forth at one time, and each one supported by such high authority.

There is so much in a name, that we consider it of some importance to settle the question as to the proper appellation by which to designate the disease, before we apply a remedy. The term "cholera" has been now so much sanctioned by general adoption, that no other would be understood—but has not injury resulted in the present case, from the too ready adoption of a loose term. Who would have prescribed opium so liberally in this disease, had it not been for the name—cholera morbus!

"Cholera," or "cholera morbus," has always meant a disease of the stomach and bowels, generally of a bilious nature, and accompanied by a sense of internal heat, and griping, pains, &c. It arises from solar heat, or from the irritation of some indigestible matters, and very seldom terminates fatally with us. It is scarcely known except in warm climates, and in the hottest seasons. Here, on the contrary, we observe a disease, characterized by a total suppression of the biliary secretion. Some of the worst cases have neither vomiting nor purging to any great extent. Most alarmingly and rapidly fatal, and pursuing its course in all climates, and at every season. The one is generally sporadic, often accidental—the other an epidemic, enjoying a limited reign. A minute comparison need not here be entered into—any medical man is competent, at a glance, when he sees the disease, to learn more than pages can convey.

But we must have a name. It is thought by many to resemble the cold plague, which prevailed in the southern parts of this country! Perhaps it does *resemble* that disease, but that is all. If a term were wanting to express what seems to be the fact, we would rather call it *a congestive fever*, and no injurious consequences will result, for as the name would be in a measure new, the treatment would rather be selected for it in particular, than derived from another affection perhaps totally different.

Allowing this cholera to be a disease of a typhoid character—granting it to be connected with an almost universal congestion of the venous system, and not inflammatory, what are the indications? These appear to me to be several and distinct, and that the whole success of our practice will depend upon the manner and the order in which they are met. Let us first review the symptoms of a man in the state of collapse. He is either pulseless or nearly so. The extremities are icy cold, and checkered with large drops of limpid water, collecting as fast as they are removed; the fingers corrugated, the nails blue; the tongue and breath chilled, and the thirst painfully urgent. To these add in most cases violent cramps of the voluntary muscles, purging of an almost colourless fluid, and the rejecting from the stomach of every thing swallowed. Apparently the cold extremities, the vomiting and the cramps, are the most urgent, and therefore the first to be removed, and hence hot applications, frictions of various kinds, anti-emetics and opium, seem so natural a prescription, that it is difficult to resist their employment. The real disease is not studied; the symptoms alone lead every one astray. To relieve the spasms and check the vomiting and purging, nothing is more natural than large doses of opium. To restore the temperature of the skin, cold and damp, who would not resort to heat and stimulating frictions? The want of success in this treatment leads to the *trial* of something else, combining perhaps some one of those remedies, (generally opium,) or else excluding them all, and standing forth with all the presumption of a specific.

Let us now take up the indications under a different view of the disease. Supposing the venous congestion be proved to be the immediate cause of those symptoms, viz. that the morbid cause having diminished the power of the heart, (whether through the nervous system or not we need not stop to inquire,) the

arteries as a consequence carry less blood than usual, must not the remote parts of the body, under such circumstances, first feel the want of their accustomed supply? The coldness of the skin then is merely a symptom, an inevitable consequence, and as such it should not be regarded in our treatment. Again, grant that a diminished arterial circulation throughout the abdomen, produces there a state of things similar to what is witnessed without, ought not the same results to ensue, namely, a diminished temperature, a loss of tone, and suppression of natural or healthy actions? How futile then all attempts to arrest the vomiting and purging, by ordinary means, such as opium, &c. These symptoms are merely the natural results of the grand cause that is still triumphantly operating, and if they, as such, are permitted to attract our attention, are we not thus decoyed away from the main object? If this position be true, the rice water discharges pouring from the rectum, and the fluids thrown from the stomach, are worthy of no more attention than the dew-like drops that collect upon the skin. But let it be remembered the stomach is an organ, possessing a higher degree of vitality than any other viscus of the abdomen, and that the distention and consequent loss of tone in it, must exercise a greater influence over the whole system, on which account its immediate restoration becomes a matter of the first importance. I conceive then this organ to be in a state of *flabby distention*, if I may so speak, to have all its veins highly distended with blood going through a torpid circulation, its arteries contracted and enfeebled in the same ratio, and having a diminished temperature. If it be true, that through the medium of the stomach, we must hope to act upon the rest of the system, it behooves us first to prepare this organ for so important a duty; we must arouse its energies ere yet it be too late; we must bring on the tonic contractions of its muscular fibres; we must expel this black venous blood, and endeavour to restore the arterial circulation to its natural superiority. What can do this but an *emetic?* We have no common cholera morbus to deal with, and would have nothing to fear in the use of such a remedy if we had. The choice of an emetic is, however, a matter of some consequence. The mustard I have never tried; all our common emetic medicines are either slow and uncertain, or else violent and dangerous. The Russian practice suggested the salt, and experience has proved it precisely what in every respect I would have it. My first course then is to dissolve two large spoonfuls of common salt in a pint of water as warm as the patient can bear it, of which a tumblerful is given at once. Almost instantaneous emesis results, and generally some retching follows; if however these are not sufficiently well effected, that is, if it appear probable that the stomach has not completely contracted, another tumblerful is given and our object attained.

The evacuation of the stomach is not the only advantage derived from an emetic. Nothing in these cases excites the heart to action so certainly as the retching that accompanies the act of vomiting; where stimuli have failed to make the slightest impression, the effort of vomiting has instantly restored an extinct pulse. But most of all, this operation is followed by a less irritable stomach, and if caution be observed subsequently in regard to drinks, no vomiting of any consequence will return. Thus we accomplish the grand objects of the first remedy; and so far as I have as yet observed, if the salt fail to excite vomiting, the case is desperate. Immediately after the emetic, perhaps in five, ten, or fifteen minutes, twenty grains of calomel for an adult, mixed with a little white sugar, are placed in the mouth dry, and washed down with some cold water. This medicine is given at this time, not with the expectation of any immediate effects, but with a view to its subsequent operation. Ten grains are then given at intervals of an hour, until often a drachm or more is taken. If reäction come on, the calomel is immediately stopped, as every object will be attained when the system is so far restored as to receive its influence. It is then the ulterior effect upon the secretions that makes its early use important, especially as it does not interfere with the other remedies next to be mentioned. It is now clear that thus far only one indication has been answered, viz. that of restoring the

stomach to a more natural condition. The next important object is, to do for the rest of the system what we have done for the stomach, that is, to overcome or remove the universal venous congestion, but of course by a different means. For this purpose, there is no substitute for venesection, and the blood must be drawn *from the veins*. It will not do to open an artery; this exhausts the patient, but does not relieve the *venous congestion*. In this respect, perhaps, we have an exception to all other cases; *we must then open the veins*. If the pulse is not perceptible, or if it be very feeble, it is better to begin by applying cups over the whole abdomen, and then if the pulse rise, we may open a vein in the arm or in the foot, and watching the pulse, let the blood flow until reäction or the improved condition of the patient indicates the attainment of our object. As regards bleeding from the arm, unless the pulse be full or hard, and there are violent spasms, we should be cautious not to resort to this practice too indiscriminately. I have seen it do harm, where a vein has been opened before the habits of the patient or the real object of the operation has been consulted. Although the pulse from the beginning has in some cases been so good as to bear a free bleeding, it has generally been necessary to resort to cupping before the restlessness and anxiety, (attendant upon the abdominal congestion,) have been relieved. For, the tossing about, the feeling of fulness and uneasiness, seem to me all to depend upon this torpid congestion of the abdominal viscera. Although not always attainable, especially in country practice, a valuable adjuvant is obtained in the application of leeches to the epigastrium, but more particularly to the anus, for here we come directly to the point and draw blood from the abdomen. The next thing to be done, to retain the ground we have thus gained, is to apply a large blister over the epigastrium, and if we succeed in producing inflammation on the skin, (vesication is not necessary,) our patient may be considered in most cases convalescent. These are the grand principles of our practice founded upon the pathological view of this disease now offered to the medical profession in these remarks. But there are some other matters to be attended to, of no small importance.

1st. The nausea and occasional return of the vomiting; to relieve this, the effervescent draught, taken in a state of effervescence, and made in preference with fresh lemon juice, or a little cold soda water, to which have been added ten or fifteen grains of sup. carb. soda, with ginger syrup, will prove most effectual. But do not let the patient indulge his desire for drink too freely. At this time it would appear that the pyloric orifice is obstinately closed, and absorption goes on so slowly in the mucous membrane of the stomach, that ultimately vomiting ensues as the only means nature has to relieve herself of an oppressive load. To illustrate this observation by a fact, I will mention a circumstance that occurred in one of our most malignant cases.

A boy, aged sixteen, was slowly recovering from a state of collapse, on the practice which I had instituted in the hospital. During my absence, an ounce of castor oil, with a drachm of spirit of turpentine, was given with a view to purge. This was taken at 3 o'clock in the afternoon. The whole of that night he was in a precarious state, and we were obliged to give him stimuli. Next morning at 8 o'clock, seventeen hours after its exhibition, this medicine was vomited from the stomach. This case will be more particularly detailed hereafter.

2d. The thirst is so urgent, that it seems cruel to refuse the patient every drink, and yet it becomes our painful duty to restrain him in the gratification of his desire. With this view, ice is generally allowed, but in very small quantities. I prefer much limiting the patient to the use of cold water as a gargle, and have generally been highly gratified to see him, when made aware of the danger of swallowing so much water, amuse himself with both pleasure and relief in washing his mouth. The sensation of thirst in this disease appears, as already stated, to be entirely a morbid nervous feeling. The tongue and mouth are cold and moist, a condition directly opposite to that generally accompanying thirst, and we have no reason to suppose that there is any increased tempera-

ture in the stomach to cause it, as the observation already made would go to prove, since as then remarked the water which was thrown from the stomach was still cold. Would not hot drinks taken into the mouth, by restoring a natural action, tend to remove an unnatural condition?

If the patient be not an habitual drunkard, or have not any chronic affection of his viscera, this course will generally succeed in bringing on reäction, or to speak more correctly, in allowing reäction to come on. We first discover the doughy condition of the skin, replaced by a natural elasticity, so that if we pinch it up, it immediately retracts. This change is first noticed on the thighs and shoulders, whence it gradually progresses, to the remotest points, until life once more seems universally disseminated; at the same time, the profuse sweats cease, and the surface, without becoming parched as in a hot fever, presents a natural degree of warmth and dryness. The thirst also disappears, an effect, in part perhaps, of the calomel, as I have seen it relieved before the tongue had regained its warmth.

3d. We said nothing respecting the constant purging in our treatment, because we consider it merely as a symptom. If, however, the stools are copious and frequent, more as a matter of convenience than from any idea of their suppression benefiting the patient, the following injection is thrown up the rectum:—To one pint of cold water, add, acetat. plumbi, ʒj.; laudanum, ʒj.—one-half to be first used, and if rejected, the remainder. This will arrest the purging. It is more than probable that it extends its influence further than the large intestines, with which it comes in contact, for it has generally been remarked, that no discharges have come away, after the use of this injection, until the calomel makes its appearance, escorting the bilious matters, the harbinger of our patient's recovery. The stools, it may be well to remark here, which make their appearance from twelve to twenty-four hours, or even later, after the exhibition of calomel, are very peculiar. They are thick and of a bright green colour; so much so, that they are familiarly termed the "spinage stools." The improvement of the patient after this takes place, is remarkable.

4th. Respecting the cold extremities, as already stated, we do not regard them as a matter of consequence, in the treatment of the *disease*. Warmth is generally applied to the feet, legs, and thighs, by means of bags of hot sand or salt, but with another view; nor have I as yet had any reason to suppose they have ever assisted in bringing on reäction; yet it must be acknowledged, that they aid in its accomplishment when once it has commenced, and if used in time may prevent or protract the approach of the collapse; for then there is still vitality enough left to feel their influence; but what can we expect from heat applied to a surface, as it were, dead, and insensible? In fact, have we not all seen in these cases, continued frictions, fail to excite the slightest warmth, although evident redness appeared upon the skin?—and have we not all seen hot applications impart their heat, only as they would to a block of wood, which feels it not, and looses it as easily as it was received? An exception has been hinted at—it is in cases where the cramps are very severe—heat applied to the muscles, and dry rubbing with the hand, have proved highly beneficial in relieving the cramps, which are often so distressing as to cause the patient to cry out. The relief is so marked, that he will tell you where to place the hot bags, and beseech you to recur to the rubbing.

Some observations upon the employment of stimuli may not be out of place here. The practice which has now been recommended, is essentially *non-stimulant*, and yet it will, under certain circumstances, admit of the employment of stimuli. These arein cases of drunkards, and of relapses, after a moderate reäction. In the rst, during the employment of the cupping, the calomel, &c. if the patient do not very soon show some amendment, it is adviseable to resort to something that will aid a debilitated stomach in coming up to its proper standard of sensibility. Hence, a strong infusion of Cayenne pepper and cloves, a table-spoonful of each to the pint of boiling water, to which, in some cases,

may be added a little of the spt. camphoræ, act as a cordial stimulant, highly beneficial. Of this tea, he may take one or two table-spoonfuls every ten minutes, being allowed afterwards to rinse his mouth with cold water, but not to swallow it. The quantity allowed must be regulated by the effect upon the pulse. In addition to this, or sometimes as a substitute, hot brandy-toddy may be given. The carbonate of ammonia is apt to excite vomiting.

In the second case, viz. where a patient has been aroused from the torpid state of collapse, and has had bilious evacuations, showing a return of arterial action, if arising from previous debility, neglect, or feebleness of constitution, he again begin to sink, the same or milder stimuli, in smaller doses however, may be used to advantage.

In some cases of this nature, the essence of beef, seasoned with salt and Cayenne pepper, is very grateful, and restores the strength. In regard to the diet of a patient recovering from an attack of this strange affection, it is difficult to name any article that the patient will express a desire for; and in the more malignant cases, he will lie, for several days, in a state almost resembling that of the hibernating animals—he wants nothing—complains of nothing—and feels nothing. If watched carefully during this time, and the indications are met as they arise, there is no danger to be apprehended; nature will at length speak for herself; and as far as I have observed, it is generally safe to gratify the particular whim of the patient in any little matter he may desire. Hot green tea is often highly grateful; cold lemonade, barley-water, chicken-water, oat-meal gruel, sago, arrow-root, mush and milk, &c., may afford us a choice, that will meet the wants of almost every case. But, one thing ought to be remembered, as a general rule, that until the restoration of the *biliary and urinary secretions*, no nourishment can be wanted, and none should be allowed. The truth of this is evident in the fact that it is seldom or never called for by the patient, and his friends had better not anticipate the call. Before concluding these remarks, I will insert from the day-book the comparative results of the practice pursued, under the direction of the physician-in-chief, in the hospital, prior to the adoption of my practice, and of that which I introduced, upon the principles before explained. From July 27th to August 6th, fourteen cholera patients were received into the hospital; of these, five were cured* and nine died. From August 7th inclusively, to August 21st, twenty-eight cases occurred; of these, twenty were cured, and eight died. Both computations have been made, by excluding all cases not choleric, and in each some of the cases were moribund when received.

A few cases have been selected, and are here inserted to illustrate more clearly the course of our practice, based upon the congestive view of this disease.

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* Including two cured by my treatment, being my first two cases—one of which will be detailed.

ture in the stomach to cause it, as the observation already made would go to prove, since as then remarked the water which was thrown from the stomach was still cold. Would not hot drinks taken into the mouth, by restoring a natural action, tend to remove an unnatural condition?

If the patient be not an habitual drunkard, or have not any chronic affection of his viscera, this course will generally succeed in bringing on reäction, or to speak more correctly, in allowing reäction to come on. We first discover the doughy condition of the skin, replaced by a natural elasticity, so that if we pinch it up, it immediately retracts. This change is first noticed on the thighs and shoulders, whence it gradually progresses, to the remotest points, until life once more seems universally disseminated; at the same time, the profuse sweats cease, and the surface, without becoming parched as in a hot fever, presents a natural degree of warmth and dryness. The thirst also disappears, an effect, in part perhaps, of the calomel, as I have seen it relieved before the tongue had regained its warmth.

3d. We said nothing respecting the constant purging in our treatment, because we consider it merely as a symptom. If, however, the stools are copious and frequent, more as a matter of convenience than from any idea of their suppression benefiting the patient, the following injection is thrown up the rectum:—To one pint of cold water, add, acetat. plumbi, ʒj.; laudanum, ʒj.—one-half to be first used, and if rejected, the remainder. This will arrest the purging. It is more than probable that it extends its influence further than the large intestines, with which it comes in contact, for it has generally been remarked, that no discharges have come away, after the use of this injection, until the calomel makes its appearance, escorting the bilious matters, the harbinger of our patient's recovery. The stools, it may be well to remark here, which make their appearance from twelve to twenty-four hours, or even later, after the exhibition of calomel, are very peculiar. They are thick and of a bright green colour; so much so, that they are familiarly termed the "spinage stools." The improvement of the patient after this takes place, is remarkable.

4th. Respecting the cold extremities, as already stated, we do not regard them as a matter of consequence, in the treatment of the *disease*. Warmth is generally applied to the feet, legs, and thighs, by means of bags of hot sand or salt, but with another view; nor have I as yet had any reason to suppose they have ever assisted in bringing on reäction; yet it must be acknowledged, that they aid in its accomplishment when once it has commenced, and if used in time may prevent or protract the approach of the collapse; for then there is still vitality enough left to feel their influence; but what can we expect from heat applied to a surface, as it were, dead, and insensible? In fact, have we not all seen in these cases, continued frictions, fail to excite the slightest warmth, although evident redness appeared upon the skin?—and have we not all seen hot applications impart their heat, only as they would to a block of wood, which feels it not, and looses it as easily as it was received? An exception has been hinted at—it is in cases where the cramps are very severe—heat applied to the muscles, and dry rubbing with the hand, have proved highly beneficial in relieving the cramps, which are often so distressing as to cause the patient to cry out. The relief is so marked, that he will tell you where to place the hot bags, and beseech you to recur to the rubbing.

Some observations upon the employment of stimuli may not be out of place here. The practice which has now been recommended, is essentially *non-stimulant*, and yet it will, under certain circumstances, admit of the employment of stimuli. These arein cases of drunkards, and of relapses, after a moderate reäction. In the rst, during the employment of the cupping, the calomel, &c. if the patient do not very soon show some amendment, it is adviseable to resort to something that will aid a debilitated stomach in coming up to its proper standard of sensibility. Hence, a strong infusion of Cayenne pepper and cloves, a table-spoonful of each to the pint of boiling water, to which, in some cases,

may be added a little of the spt. camphoræ, act as a cordial stimulant, highly beneficial. Of this tea, he may take one or two table-spoonfuls every ten minutes, being allowed afterwards to rinse his mouth with cold water, but not to swallow it. The quantity allowed must be regulated by the effect upon the pulse. In addition to this, or sometimes as a substitute, hot brandy-toddy may be given. The carbonate of ammonia is apt to excite vomiting.

In the second case, viz. where a patient has been aroused from the torpid state of collapse, and has had bilious evacuations, showing a return of arterial action, if arising from previous debility, neglect, or feebleness of constitution, he again begin to sink, the same or milder stimuli, in smaller doses however, may be used to advantage.

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first dose of calomel, twenty grains were again given. Between these two doses, as the pulse had improved after the vomiting, cups were applied over the whole abdomen, and a few ounces of blood extracted. A large blister was then applied over the abdomen, from the navel to the top of the epigastric region. Ten grains of calomel were exhibited hourly until sixty were taken in all, hot sand bags were also placed to the lower extremities. Thus, she was left to await the effects of what had been done; taking nothing but ice, and occasionally soda water, or the effervescent draught. Towards the latter part of the day her appearance was so unfavourable, that every one who saw her felt persuaded the result was no longer doubtful, and predicted her death that night; I was sanguine, and had hopes; I had seen how rapidly patients sink when once in the collapsed state, if not likely to recover. She had still some pulse, less vomiting, was less urgent for drink, and what was more important than all, the *blue face* and distended veins were not remarkable. I therefore did not regard the cold, wet and shrivelled hands, the almost extinct voice, and the general bad appearance. In this state she passed the night, when towards morning an evident improvement was discovered; reäction began to appear about the neck, shoulders and thighs, and my patient's eyes were brighter, and her lips of a better colour. The improvement was slow; in the course of this day the spinage stools were discharged, and she was convalescent. The next day salivation came on, which proved troublesome. She recovered entirely.

The next case in which I put in practice this treatment, occurred in the hospital on the 7th of August; but as the patient had not fallen into the collapsed state, and recovered without difficulty, no particulars are necessary.

The result of these two cases made me anxious to put my views to a further trial, and on the 8th the opportunity occurred in the person of a German, whose treatment and condition were observed by many physicians and students visiting the hospital constantly. The circumstances under which he came under my care are briefly these:—

He was attacked about 5 o'clock in the morning, and brought into the hospital at 8.

I arrived there at 9, saw him undergoing treatment, but did not interfere. The only medicine prescribed, was a mixture of magnesia, spirit of camphor —and chloric ether—with water. About half past ten, as the physician-in-chief was leaving the bed-side, I stopped, and asked his permission to treat the case. He replied—"It is not a *fair case for you*—the man is moribund." He, however, left the hospital, without ordering any thing for him, and appeared to assent to my request. I then approached the patient, and found him cold and pulseless, covered with large drops of cold sweat, restless and tossing about his bed; he spoke in a whisper scarcely audible; he had no urinary discharge, but occasionally the rice-water evacuations; the hands and feet blue, and marked by distended veins. I am not prepared to say what was the colour of his lips, but the whole expression of his countenance was so bad, that a single look would convince us he must die.

Such was this man's condition when I ordered the nurse to prepare the salt vomit. It was taken through some persuasion, and nearly the whole pint swallowed. In one minute vomiting began, and brought from his stomach an enormous quantity of fluids which he had taken. The retching and fruitless efforts that now followed were so severe, and his exhaustion seemed so great, that I stood, anxious for the result. At length he became composed, and upon taking hold of his wrist, to my great gratification and relief, there was pulse. Let it suffice now to say, that from this time, his pulse did not leave him, and that vomiting did not return. The calomel was the next step, and this was not spared. He began with one scruple, and took in the course of the day at least seventy grains. Cups were applied to the abdomen; they drew blood, and his pulse rose. A blister was next applied over the epigastrium. The effervescent draught, occasionally a little ice, and rinsing his mouth with cold water, comprised all the treatment that followed. It was not until evening that

his condition was much improved. From this time, he recovered, but very slowly; large quantities of spinage stools came away the next day, at which time also the urinary discharge began to return. In a few days he was sent out to the convalescent hospital, and was restored to perfect health, without salivation. A curious eruption appeared upon his skin, during his convalescence, which in a few days disappeared.

One other case will now be detailed, to explain the treatment in those which relapse. This occurred when the practice of the hospital had become established, and trials had been abandoned.

A most unfortunate family residing in Lombard street, near the Schuylkill, consisting of a man, his wife, and seven children, became the victims of this disease, to an extent seldom equalled.

An infant, two months old, was first attacked—it died; and the mother returned from the funeral much fatigued; she went to bed however as well as usual, and about 2 o'clock in the morning was attacked with vomiting and purging; about the same time, two sons, one fourteen years of age, the other sixteen, became affected. Between 8 and 9, she was brought to the hospital, in the last stage of collapse, and died in three hours:—while she was breathing her last, three of her sons arrived in succession, two with the cholera, and one with a chronic liver affection, very much exhausted. Our attention was now directed from the dying, to the relief of those for whom there was hope. The boys affected with cholera, were vomited, cupped, blistered, and treated with the calomel in the usual manner. Francis, the elder, was just getting into the collapsed state when this course was commenced; his skin had an unfavourable character—it was almost universally *doughy* and cold; and the blood in the veins seemed to get along with much difficulty. The countenance also had an unfavourable aspect; his fate long stood doubtful, but he got through that night, and with the exception of cold hands and feet, seemed to have passed into a state of partial reäction: bilious stools had been discharged; thirst had very much diminished; the elasticity of the skin was restored to the parts immediately connected with the body, and his pulse, although not strong, was quite apparent. Soda water, small pieces of ice, and the effervescent draught, were ordered to be given occasionally; and through the morning he took some small doses of calomel. About 3 o'clock, during my absence, he was ordered, by the physician-in-chief, an ounce of castor oil, with a drachm of spirit of turpentine, as he appeared to be sinking. During the evening, it being then my term of duty, it was discovered that he was almost pulseless; that the skin had got colder; his tongue again cold; his respiration bad, and his whole aspect quite as unfavourable as at the commencement of his treatment. Under such circumstances, stimuli were indispensable. The Cayenne pepper tea, warm, was immediately given at intervals, and he was carefully watched through the night, taking also, some other stimulant not now recollected. At 8 o'clock next morning, he vomited, and threw up the oil he had taken the day previous, and also the drinks he had swallowed in the intermediate time. This oil must then have lain in his stomach seventeen hours. The vomiting, however, did not seem to depress him; the stimulant practice was continued. Towards evening he again relapsed somewhat, the bilious stools having disappeared, and the pulse flagging; more active stimulants, given with a more liberal hand, a third time raised him. During this day, he also took occasional doses of calomel; sometimes five grains; sometimes two grains. The exact amount of calomel he took, is not known, as in the hurry of the moment, no notes of the cases were made. The whole history, as here detailed, is correct in the main points, although the minutiæ are not recollected. It was during this day, that we learnt from his brother, for the first time, that Francis had been accustomed to take a few small glasses of spirits, when at his work in the brick-yard, although not in the habit of getting intoxicated. Great attention in regard to his pulse, and to the regular supply of the stimuli, kept him up and he finally recovered. It was for four or five days after this, that he laid torpidly on his bed, with a good

pulse, bilious stools, clean tongue, and in a good state of reäction, but unable to take any article of food whatever. He was just commencing the use of quinine, when he left us for the convalescent hospital. No salivation was produced by the large qnantities of calomel he took. There was something very extraordinary in the poison that produced the disease in this family. The brother, affected with the liver complaint, was emaciated to the last degree, and died under choleric symptoms in a few days. The other brother, with cholera, was obstinate and slow in his recovery; and a sister only five years of age, who was brought in two days after Francis, was in a doubtful state for a week, but she also at length was restored to health. Two others of the same family, a girl about fifteen, and a child of four years of age, were conveyed to another hospital, and in spite of all efforts died. Thus in one house five out of eight, attacked, were hurried to the grave in a few days. The father was the only one not taken sick, and of the eight that composed his family circle, only three now remain. It may be well to mention, that by reference to the book of cases, it is found, not a single case of cholera terminated fatally after the adoption of my system of practice, except confirmed drunkards, and those who were brought in too late; that is, in what is termed the blue stage, and two of these last had been treated by opium previous to their arrival. By the blue stage is understood, that condition of the venous system, which with a sunken eye gives to the face a peculiar dark expression; the veins on the inside of the lips are filled with dark torpid blood, and those on the extremities are in a similar condition. It is always accompanied by great jactitation, oppression, and complaints of excessive heat. It is in fact a state of gradual death.

So much success has been claimed for the saline powders, that, although I feel totally unable, as yet, to explain their mode of operation, it may be well to add the prescription, as it may perhaps become an adjuvant to the practice here recommended. It will, at least, leave it to the judgment of the practitioner, to select so much of each course as may meet the indication of any particular case.

℞. Sup. carb. sodæ, ℥ss.
Muriat. sodæ, ℈j.
Chlorat. potassa, grs. viij.
To be taken every hour in a litttle water.

Thus we have attempted to place before the profession a pathological view of this disease, formed perhaps upon too limited experience, but connected with a system of practice, at least consistent with the principles that have been advanced. "*The cholera*" is rapidly spreading in all directions, so that if any benefit is to be derived from a new course of treating it, let it be made public at once, in a crude form, rather than retained for polishing, to stalk forth at length, in all the pride of a fine dress, when, alas! the grave has closed upon thousands, and all around is sadness and mourning.

Letter from Dr. C. A. Lee, *of Greenwich Hospital on the Treatment of Cholera.* —My Dear Doctor—Your letter of the 20th came yesterday.—I am excessively hurried, and cannot write you as I would wish. As to our treatment, I trust we have at length hit upon a plan which leaves nothing more to be expected in the way of therapeutics. In the early stages, our practice is not peculiar; we have employed the usual means, and our treatment has been uniformly successful. It is only in the stage of collapse, in which most of our patients are brought in, that we have experienced any difficulty. At first we relied on powerful internal stimulants and external revulsives; but our success was small, no permanent reäction could be produced. Inhaling the nitrous oxyde and oxygen gases had no better effect. At length I concluded that there was no absorption from the mucous membrane; that from the violent action it had undergone, its functions were lost, and brought into the same condition as that of the skin. The coldness of the tongue, and the fact that hot injections were returned cold, gave great probability to the correctness of this pathological view. The only

thing then left, was to undertake to introduce medicines into the circulation, mechanically through the skin. The indications were to restore the circulation, relieve spasm, promote the action of the absorbents, and unlock the secretions. To effect these objects, we prepared the following mixture.

℞. Strong mercurial ointment, 1℔.; powdered camphor, ½℔.; powdered Cayenne pepper, ¼℔. Mix well together, and have the patient rubbed all over for half an hour at a time, and repeat the operation accordingly, till the mouth is affected. The success of this plan is perfectly astonishing. Without administering a particle of medicine internally, reäction is sure to follow in from one to three hours, even in the most perfect collapse; the secretions begin to return, the evacuations become bilious, and the patient expresses himself perfectly relieved. Since we began this plan, more than two-thirds of our patients have been cured—a large proportion of the rest were in a dying state when brought in. I believe the mercury is rubbed mechanically into the pores of the capillary vessels, and thus taken into the circulation. We invariably affect the mouth in from four to ten hours—then the patient is generally safe. We have lost but two where the gums were affected. In the course of my professional life, I have never been so gratified in the effect of remedial agents. The greatest sceptic in the usefulness of our science, would yield to the demonstration of such facts as our reports present. CHARLES A. LEE.

To Dr. L. A. Smith, Newark, N. J.

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Two Cases of Accidents, from Admission of Air into the Veins during Surgical Operations. By JOHN C. WARREN, M. D. Professor of Anatomy and Surgery in Harvard University.—Some professional men have expressed doubts as to the accidental admission of air into the veins during surgical operations. Such doubts appeared well founded when the occurrence first attracted the attention of surgeons; especially on considering that veins about the neck were so very often wounded in the removal of tumours; and that some of them, as the external jugular, are frequently opened for the purpose of taking blood, without any unfavourable consequences.

Not long since I had evidence of the existence of such cases in two of my own patients within no great distance of time from each other. The certainty of such accidents and the possibility of their frequent occurrence, have led me to consider it a matter of duty to state them publicly, for the satisfaction and government of other surgeons. It seems to me remarkable, that nothing of the kind before occurred in my own practice, nor in that of my father and predecessor in a long and active surgical career.

CASE I.—Mr. William Burrill, of Salem, aged 60, was admitted into the Massachusetts General Hospital on the 16th Oct. 1830. He had a cancerous affection of the left side of the face and neck of the extent of three or four inche diameter. It was hard at the edges, of a livid red colour, ulcerated in the cen tre, very offensive, very painful, and had made an impression on the general health. The parotid gland, the submaxillary, the sublingual, and all the textures excepting the bone, were involved in the complaint. The lower jaw itself was thought to be diseased at first, but it afterwards appeared that it was not so. In so bad a state of things, I felt very little hope of being able to eradicate the disease, and would not have attempted any operation, had not the patient solicited it.

Considering the extent of the disease, that important blood-vessels would be divided, namely, the facial and sublingual arteries, probably the temporal and even the external carotid, I thought it best to begin by securing the carotid trunk. An incision for this purpose was begun opposite the thyroid cartilage and carried two inches downwards. The platysma muscle was divided; the edge of the mastoid exposed and dissected. Thus far, only a few drops of blood were discharged. The face of the sheath of the great vessels was a little uncovered, when a small effusion of venous blood appeared under the knife, and checked the operation. At that instant a very distinct sound was heard, like

the passage of air through water. A few bubbles were seen in the venous blood, the flow of which was immediately arrested by applying a finger on the part. The patient exclaimed, "I am faint." On regarding his countenance, it was not pale, but livid, almost black, and the muscles agitated by a convulsive motion. The respiration became deep, laboured, and stertorous like that of apoplexy. Committing the compression of the vein to Dr. Hayward, who assisted me, I examined the pulse at the wrist, found it distinct, but very slow. The wound not bleeding, and very little blood having been lost, I directly opened the temporal artery, and the blood poured from it with great freedom. As it flowed the respiration became more frequent and less laborious; the pulse at the wrist more natural. The leaden colour in the cheeks assumed a reddish tinge; and the alarming character of the symptoms was evidently diminished. About twenty minutes elapsed during these changes. At the end of half an hour I judged it safe to remove the patient to his bed, where he lay in a state of insensibility for two hours; at the expiration of which he awaked as from sleep, still breathing like an apoplectic. The night was passed without any accident, and on the following morning he was as well as usual, with the exception of a moderate soreness over the thorax, and a head-ache.

In seven days after the accident described above, the operation was performed without tying the carotid artery.

The diseased parts were included in an elliptical incision, extended from the lobe of the ear to the upper part of the neck, and including the submaxillary, the sublingual and parotid glands, all of them in a morbid and disorganized state. The os maxillare inferius was not diseased. The hæmorrhage was copious; but readily arrested, with the exception of that from a large vein, which from its depth, under the jaw, could not be distinguished so as to admit the application of a ligature, and was therefore compressed by a sponge. The veins below the wound were compressed by Dr. Hayward during this operation. The patient experienced a slight faintness, which soon passed off. He had no bad symptoms, and on the 10th of December the wound being nearly healed, he requested his discharge which was granted.

Case II.—Nancy Bunker, of Trenton, in Maine, married, her age 33. Three years since she noticed a hardness in the right breast, which increased till it involved the whole gland in a tumour, very hard, moveable, yet obviously connected with the pectoral muscle by a morbid adhesion. The nipple is drawn in. The axilla is occupied by a considerable tumour of a globular form, and quite hard. The disease has been accompanied during the last year with very constant lancinating pains. The patient is desirous of an operation; has a strong conviction that she shall not recover; yet is perfectly tranquil and resigned.

On a careful examination of the tumour, it seemed that the whole of the diseased parts could be removed, and it being thought that the patient would thus have a chance for life, and that if the disease reäppeared her sufferings would be less than if the gland were allowed to remain, the operation was performed on the 24th December, 1831.

The patient sat in a chair. The right arm was extended, raised above a horizontal line, in order to give tension to the skin, and permit access to the armpit—and was supported in this position by an assistant. The skin on the surface of the breast, with the diseased nipple, were included in an oval incision, the breast was dissected from the pectoral muscle and left connected with the axillary glands while the extirpation of these glands was effected. As they adhered to the great axillary vessels they were cautiously detached by dissection, and by insinuating the finger where the cellular substance was loose, between the tumour and the great vein. This separation was nearly effected—only a slight connexion still existing at either extremity of the tumour. Proceeding to separate it, at the outer part of the axilla, a vein was divided and a small quantity of venous blood discharged. This obscured the parts at that point, and the knife was therefore carried to the other extremity of the tumour. Scarcely was this done, when the patient struggled, and on regarding her I

perceived her complexion to be a livid pale colour, and at the same instant the bubbling or clucking noise was heard, though indistinctly, but the place from which it issued was not visible, the surrounding skin and fat having fallen over it, at the moment of the transfer of the knife. Directly, the axilla was compressed—the patient became insensible, breathing in a distressed manner as in apoplexy. The tumour was at once separated. The posture of the patient was changed, and she was supported by those around. Some brandy was poured down, and ammonia was introduced into the nostrils. The pulse however became less distinct every instant Cloths dipped in hot water were thrown over the extremities. Strong frictions were applied to the chest and to all parts of the body. Considerable quantities of brandy were again poured down the throat. At this moment the livid colour of the cheeks gave place to a suffusion of vermilion red, and no glow in the cheek of a youthful beauty ever gave one so much pleasure as that flush. I was turning to the class, who watched the different operations with intense anxiety, to say, the "danger is over," but checked myself and continued the efforts. But the flush soon passed off; the lividity reäppeared; the respiration became more feeble; pulse at the wrist scarcely perceptible; and notwithstanding the redoubled applications of external heat and moisture, the extremities and the whole body cooled rapidly, and presently the respiration ceased.

As a last effort, I opened the larynx and put in operation the inflation of the lungs by a bellows, in a very speedy and perfect manner—imitating the movements of inspiration and expiration with great exactness—continuing the general application of heat and frictions to the whole surface. These administrations were continued for about twenty minutes longer, without any encouraging appearances. At the end of this time, I perceived there was no remaining hope of the restoration of my patient to life. The friends being anxious to take advantage of a vessel then sailing for their home, the body was soon after removed, and no opportunity afforded for examination.

The effects of the entrance of air into the blood-vessels appear to have been known to Lieutaud, Morgagni, and other distinguished pathologists; but the danger of such an occurrence in surgical operations does not seem to have been adverted to, until the operation of M. Dupuytren, in which the admission of air through the external jugular proved suddenly fatal. Since the publication of this fact, the occurrence has presented itself to many surgeons in Great Britain and this country.

A natural scepticism in regard to these accidents has arisen from not considering the peculiar action of the auricles of the heart. How, it is asked, can air force itself into the veins, which are already filled with blood, and at the moment this fluid is discharging itself from an aperture in the vessel? The possibility of the accident will however be admitted, on recollecting that the auricles act not only like an expelling syringe, when they drive the blood into the ventricles, but that they have the power of suction, when they dilate themselves, thus sucking the blood from the two cavæ, and of consequence from the great veins connected with the cavæ. This suction power of the auricles explains what would otherwise be unintelligible, the movement of blood through the large inactive veins near the heart.

There remains another difficulty. Why do not the sides of these veins collapse when the blood is pumped from them by the auricle? and if they do thus collapse how can air be drawn in through a small aperture in one of these vessels? This objection has been removed by M. Bèrard, who has shown that the large veins near the heart are protected by fasciæ, connected to the coats of the veins by cellular substance. The fasciæ themselves are attached to bones, in such way as to prevent their collapsing on the veins. Further, it may sometimes happen that the coats of a vein assume a morbid structure which gives them an unhealthy rigidity, and in this manner prevents their collapse. This occurred to M. Dupuytren, as I am informed by my friend Dr. Lodge, who was

in Paris at the time. M. Dupuytren, being about to divide a large varicose saphena vein, expressed some apprehension that air might be admitted and that the result would be fatal. The vein was divided, the peculiar sound of the entrance of air was heard, and the patient expired.

In the first of the cases above related, the vein opened was a small vein crossing the neck from the median external jugular to the great internal jugular. At least I presume this to have been the vessel; though there can be no certainty of its identity, the incision in the neck being small; the parts not much uncovered, and the sheath of the internal jugular not opened. This small vein, stretched across the neck, was kept tense by its attachment to fixed veins at each extremity, and would thus be in a favourable position for the admission of air on the suction of the auricle.

The vein opened in the second case was the subscapular. It did not seem to be large, though perfectly visible before it was cut—and the point of the incision was at a sensible distance from the great axillary vein—say nearly an inch. The dissection had separated it from the surrounding parts in a considerable degree. The axillary cavity was extensively dissected; so that the attachments of the fasciæ covering the great vein must have been much relaxed.

Here then was a small vein, at some distance from the heart, dissected from the surrounding parts; and its receiving vein also dissected. The coats of the vein were not visibly diseased. The explanations of M. Bèrard will not therefore apply. The cause of the phenomenon in this case is to be sought in the *position* of the arm. The limb was extended and elevated; in consequence of which, the axillary vein was in a state of extreme tension. The subscapular vein was also kept tense by the chain of axillary glands and by the weight of the depending breast; for this organ had not been separated from the glands, in order that they might be drawn down by it and exposed.

The possibility of these accidents under circumstances like those above, where there could be so little reason to fear them, must be a cause of anxiety to operators, in the removal of tumours from the neck and arm-pit; and I know of no effectual means to guard against them. *Pressure* on the vessels intervening between the disease and the heart would often be impracticable; and where it could be applied, the tension of the fasciæ would generally render it abortive. Causing the patient to *expire* the air from the lungs could only be practised for a moment. *Change of position*, by relaxing the vessels, would do something; yet the state of tension must in many cases be resumed, in order to carry on the operation. The immediate compression of the vessel on the appearance of the accident, might sometimes save the patient from death, though not from very threatening appearances. For in the first case the patient's life was preserved; but although the accident was instantaneously arrested, he was saved with difficulty.

On a view of all these considerations, it appears prudent to suspend an operation in the vicinity of the heart, at the instant of appearance of venous blood from a suspicious point; and to compress the vessel, that time may be had for observing whether dangerous symptoms are likely to arise, and if these actually appear, we should directly resort to the means spoken of. First, compress the orifice of the bleeding vein with the utmost care. Second, apply pressure on the veins between the wound and the heart. Third, relax the part in which the vein is seated. Fourth, the patient may be directed to expire the air from his lungs.

The means to be pursued for saving life, after air has been admitted, have been stated in the history of these two cases, and I know of none more effectual than were adopted. The opening of the temporal artery gave great relief to Case I. It was not resorted to in Case II., because the patient had already lost as much blood as she could spare, during the operation.

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